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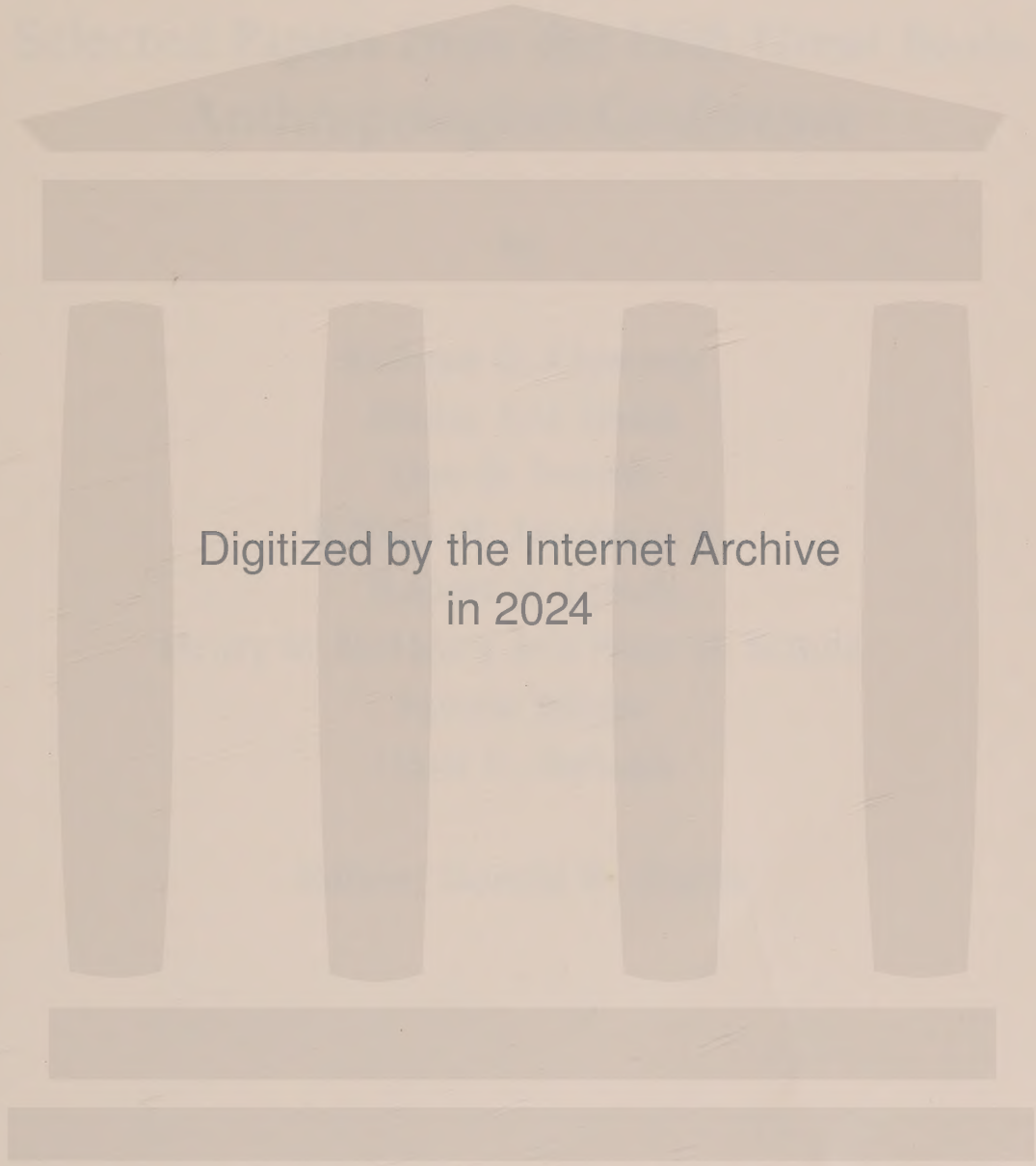

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Cover illustration:

Pyramid Lake Paviotso house, baskets and occupants.
Photograph by C. Hart Merriam, 1903.

Selected Papers from the 14th Great Basin Anthropological Conference

by

Richard O. Clemmer
Emma Lou Davis
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William H. Jacobsen, Jr.
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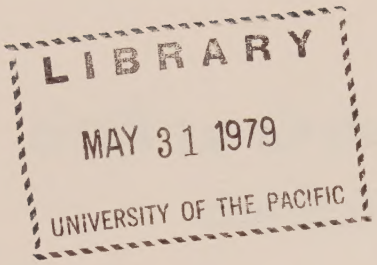

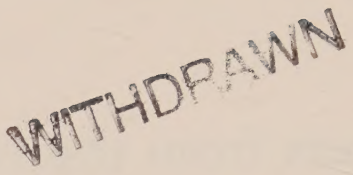

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INTRODUCTION

The Fourteenth Great Basin Anthropological Conference convened September 13-15, 1974 in Carson City, Nevada. The conference, held in the Nevada State Legislative Building, was sponsored by the Nevada State Museum in cooperation with the Department of Anthropology, University of Nevada, Reno. The chairpersons of the various sessions, the docents of the Nevada State Museum, and a special committee of the Am-Arcs of Nevada, northern Nevada amateur archaeologists, were instrumental in making the meetings a success. As general Chairman, I wish to extend my thanks to these persons, and to all others who participated in the conference, or attended the many sessions.

The growth of the G. B. A. C. over the years is reflected in some simple statistics. In 1962, the Eighth Great Basin Conference was held at the Nevada State Museum under the chairmanship of Dr. Richard Shutler, Jr., then Curator of Anthropology with the Museum. Shutler (1963: ii), in a summary paper on the 1962 Conference, reported that one general session and two symposiums were held, with some 22 papers presented, and with approximately 100 persons in attendance. Twelve years later, the conference had grown to six general sessions and two symposiums, with some 75 papers presented, and with a total of 260 registrants. In addition, a program in visual anthropology, a showing of five films on Great Basin archaeology and anthropology, was featured.

While papers in archaeology still comprised the most numerous group of contributed papers, the other sub-disciplines in anthropology were well-represented in the program. Thus, the 1974 G. B. A. C. achieved a desired balance in the presentations.

Making the selection to be included in this published volume was not an easy task. A large number of papers read at the conference had been committed for publication elsewhere. Others were too incompletely developed for inclusion in this volume. Still others were in need of revision. The editors felt that a regional conference such as the G. B. A. C. ought to reflect a wide range of thought and research in anthropology, and that any resulting publication ought to reflect that diversity. For this reason, the chairpersons of the various sessions were solicited for nominations of papers to be included in this volume. Their recommendations were heeded. Thus, because of these considerations, and the plain hard economic fact of sky-

rocketing publication costs, of the seventy-six papers listed in the 1974 G. B. A. C. program, only eight were selected for inclusion in this volume.

A list of papers presented at the 14th G. B. A. C. follows.

D. R. T.

PROGRAM

1974

GREAT BASIN ANTHROPOLOGICAL CONFERENCE

Friday Morning, September 13, 1974

WELCOME: Bob Stewart, Administrative Assistant to Governor O'Callaghan. Don D. Fowler, Western Studies Center, Desert Research Institute, University of Nevada, Reno, "The Past Twenty Years of Great Basin Anthropology".

SESSION ON ETHNOHISTORY AND INDIAN-WHITE RELATIONS: Chairman, Elmer Rusco, University of Nevada, Reno.

Mary Rusco (University of Nevada, Reno): "Fur Trappers in Snake Country: An Ecological Application of the Direct Historical Approach".

Edward C. Johnson (Schurz, Nevada): "History of the Walker River Paiute Tribe".

Donald R. Tuohy (Nevada State Museum): "Notes on the Demography of the Kuyuitikadi of Pyramid Lake, Nevada".

Robert N. Lynch (University of Rhode Island): "Cowboys and Indians: An Ethnohistorical Portrait of Indian-White Relations on Ranches in Western Nevada".

Elmer R. Rusco (University of Nevada, Reno): "Chinese-Indian-White Relationships in 19th Century Nevada".

Omer C. Stewart (University of Colorado): "The Western Shoshone and The U.S. Government, 1863-1950".

Warren d'Azevedo (University of Nevada, Reno): "Early Washo Leaders".

Friday Afternoon, September 13 INDIAN-WHITE RELATIONS, continued.

Catherine S. Fowler (University of Nevada, Reno): "Sarah Winnemucca and 'The Lands in Severality' Legislation".

Richard H. Lane (University of Idaho): "Adaptive Processes in Great Basin Sheep Nomadism".

Richard O. Clemmer (Brooklyn College of the City University of New York): "Pine Nuts, Cattle, and the Ely Chain: Rip-Off Resource Replacement".

Norman Allen (University of Nevada, Reno): "A Case Study of Factionalism and the Initiation of a Factory on a Reservation".

Michael Hittman (Long Island University): "Never Mix, Never Worry: The Heuristic Value of Offering a 'Joint' to an Informant".

Joy Leland (Research Associate, Desert Research Institute, University of Nevada, Reno): "Scope of Acquaintance in a Nevada Indian Colony".

Robert Poor (Desert Research Institute, University of Nevada, Reno): "Frederick Lander and Indians in the Way of the Wagon Road".

Friday Morning, September 13, 1974

PALEOECOLOGY, CULTURAL ECOLOGY, AND EARLY MAN: Chairwoman, E.L. Davis, University of California, San Diego.

Henry G. Wylie (University of Utah): "Archaeological Impacts of Pinyon-Juniper Chaining: A Test".

Richard W. Casteel (University of Washington): "A Re-examination of Environmental Factors and Hunter-Gatherer Tribal Areas".

James C. Chatters (University of Washington): "Weathering and Slow Flowage of Soils on the North Slope of Open Archaic Sites in Northeastern Nevada: A Quantitative Geographical and Geomorphological Report for Archaeological Interest".

Jonathan O. Davis (Washington State University): "Exploratory Late Quaternary Volcanic Ash Stratigraphy of the Northwestern Great Basin".

Jim Johnston (Plumas National Forest): "Carbonates: A Chronological Indicator".

Peter J. Mehringer (Washington State University): "Holocene History of Little Lake, California".

Friday Afternoon, September 13 PALEOECOLOGY, etc., continued

E.L. Davis (University of California, San Diego): "Paleoindian Life Styles at China Lake, Mojave Desert".

Alan P. Garfinkel (California State University, Northridge): "Faunal Procurement Systems and Hunting Behavior in the Cajon Pass Area, San Bernardino, California".

B. Robert Butler (Idaho State University): "Owl Pellets as Potential Sources of Paleoecological Data".

Richard D. Hill (Idaho State University): "Faunal Remains from Great Basin Archaeological Sites".

Joel Gunn (University of Pittsburgh): "Altithermal Variability in the Great Basin". Read by P. J. Mehringer.

Max Pavesic (Boise State University): "Archaeological Observations of the Western Snake River Plain".

Friday Afternoon, September 13

SESSION ON PHYSICAL ANTHROPOLOGY AND RELATED PAPERS IN ARCHAEOLOGY: Chairwoman, Sheilagh T. Brooks, University of Nevada, Las Vegas.

James Hutchins (California State University, Sacramento): "Dimensions of Status at SJo-91".
Jerald Jay Johnson (California State University, Sacramento): "Possible Hokan Affiliation of the Karlo Population".
Henry M. McHenry and Peter D. Schulz (University of California, Davis): "Harris and Hypoplastic Lines in Prehistoric Californians".
Larry S. Kobori (University of California, Berkeley): "The Relationship Between Archaeology and Physical Anthropology in the Excavation and Analysis of Human Skeletal Material".
Sheilagh T. Brooks (University of Nevada, Las Vegas): "'Salvage' Physical Anthropology".

Saturday Morning, September 14

CONTINUATION OF THE PANEL ON INDIAN-WHITE RELATIONS IN THE GREAT BASIN: Chairman, Norman Rambeau, Nevada Indian History and Culture Development Program, Inter-Tribal Council.

Jo Ann Nevers (Nevada Indian History Project, Inter-Tribal Council): "Washo Ethnohistory".
Dorothy Nez (Nevada Indian History Project, Inter-Tribal Council): "Ethnohistory of the Northern Paiute".
Gerald Lewis (Associate, Indian History Project, Inter-Tribal Council): "Owens Valley, Mono Lake, and Antelope Valley".
Warren Emm (Schurz, Nevada): "Contemporary Problems".
Benson Gibson (Indian Affairs Commission): "Contemporary Problems".
Norman Rambeau (Director, Nevada Indian History and Culture Development Project): "History and Culture Perspectives".
Discussant: Ruth M. Houghton (University of Nevada, Reno).

Saturday Morning, September 14

CURRENT RESEARCH IN GREAT BASIN ARCHAEOLOGY: Chairman, David H. Thomas (American Museum of Natural History).

Kathleen Moffitt (Museum of Northern Arizona): "An Archaeological Transect from Lake Powell to the Beaver Dam Mountains".

Paul R. Fish and Peter J. Pilles, Jr. (Museum of Northern Arizona): "An Archaeological Research Design for the Kaiparowits Power Project: An Examination of the Great Basin-Southwest Interface".

Richard H. Brooks (University of Nevada, Las Vegas, Museum of Natural History; Nevada Archaeological Survey): "A Roasting Pit Complex in Southern Nevada".

Kathryne Olson (Nevada Archaeological Survey, University of Nevada, Las Vegas, Museum of Natural History): "New Potentials for Ceramic Analysis in Southern Nevada".

Daniel O. Larson (Nevada Archaeological Survey, University of Nevada, Las Vegas, Museum of Natural History): "An Operational System for Projectile Point Identification in Southern Nevada".

Brian W. Hatoff (University of California, Davis): "Strategy Report: Pine Valley Archaeological Project".

Laurel Casjens (Harvard University): "Results of the Ruby Valley Archaeological Survey with Ecological Implications". Read by Amy Dansie.

Robert York (Bureau of Land Management, State Archaeologist, Nevada): "Archaeology at Long Valley, White Pine County, Nevada".

Harry U. Norcross and Francis A. Riddell: "The Surface Archaeology of the Pyramid Lake Region, Nevada".

Saturday Afternoon, September 14 CURRENT RESEARCH IN ARCHAEOLOGY, continued.

David H. Thomas (American Museum of Natural History): "Progress Report on Excavations at Gatecliff Shelter, Central Nevada".

C. Melvin Aikens and David L. Cole (University of Oregon): "Dirty Shame Rockshelter, Southeastern Oregon".

David B. Madsen and Michael S. Berry (Antiquities Section, State Division of History, State of Utah): "A Reassessment of Hogup Cave and the Implications for Eastern Great Basin Prehistory".

Richard E. Hughes (California State College, Sonoma): "An Analysis of Chipped Stone Debitage from a Lowland Occupation Site in the Goose Lake Basin, Northeast California".

Francis A. Riddell (State of California, Dept. of Parks and Recreation): "A Dated Burial from Honey Lake, California".

Robert Elston (Nevada Archaeological Survey, University of Nevada, Reno): "A Model of Aboriginal Land Use in the Sierra Nevada Near Lake Tahoe".

Saturday Morning, September 14

HISTORIC ARCHAEOLOGY IN THE GREAT BASIN: Chairman, Donald L. Hardesty, University of Nevada, Reno.

Joe Winter (California State University, San Jose): "The spread of Agriculture in the Great Basin".
Don D. Fowler (Western Studies Center, Desert Research Institute, University of Nevada, Reno): "Models in Great Basin Prehistory".
Lawrence E. Dawson (Lowie Museum of Anthropology): "The Relevance of Lamb's Hypothesis to Problems of California and Great Basin Basketry".
James Adovasio (University of Pittsburgh): "Fremont Basketry".
Joseph G. Gallagher (Southern Methodist University): "Settlement Patterns and Idaho Archaeology".
Philip J. Wilke (University of California, Riverside): "Late Prehistoric Human Ecology in the Salton Basin, California".
Dorothy Dansie (Am-Arcs of Nevada): "Historical Archaeology of Washoe City, Nevada".
Gene Hattori (Washington State University): "An Historic Indian Camp Site in Virginia City, Nevada".
C. William Clewlow, Jr. (UCLA Archaeological Survey): "Archaeology of the Historic Period, Grass Valley, Nevada".

Saturday Afternoon, September 14

SESSION ON LINGUISTICS AND RELATED PAPERS: Co-Chairmen, William Jacobsen, Jr. and Catherine S. Fowler, University of Nevada, Reno.

Pamela Munro (University of California, Los Angeles): "Chemeheuvi Quotatives and Verbs of Saying".
Per Hage and Wick R. Miller (University of Utah): "Eagle=Bird": A Note on the Structure and Evolution of Shoshoni Ethno-ornithological Nomenclature". Read by C. Fowler.
Grace Dangberg (Minden, Nevada): "The Qualities of Washo Speech".
William H. Jacobsen, Jr. (University of Nevada, Reno): "Washo Internal Diversity and External Relations".
Daryl White (University of Connecticut): "Men's and Women's Speech in Yana Society".
Judith Shapiro (University of Chicago): "Kinship in the Great Basin: A Comparative View".

Saturday Afternoon, September 14

SESSION ON ROCK ART IN THE GREAT BASIN: Chairwoman, Karen Nissen, University of California, Berkeley.

James C. Bard and Colin I. Busby (University of California, Berkeley): "The Manufacture of a Petroglyph: A Replicative Experiment".
Dorothy Mayer (University of California, Davis): "Star Patterns in Great Basin Petroglyphs".
Rovert F. Heizer (University of California, Berkeley): "Some Lincoln County Petroglyph Sites".
Robert Fleming (University of California, Berkeley): "A Re-evaluation of Petroglyph Sites and Styles in the State of Nevada".
Paul E. Nesbitt (Millbrae, California): "The Occurrence of Intermontane, Southern Tradition Glyphs in Eastern Arizona".
Karen M. Nissen (University of California, Berkeley): "Correlations of Petroglyph Elements in the Great Basin".

PROGRAM IN VISUAL ANTHROPOLOGY
Friday, September 13 through Sunday, September 15.

"Lost City, Nevada" about 15 minutes; the film was made in the 1930's by S.M. Wheeler, one of Mark R. Harrington's assistants on the Lost City dig. Copy made from original by Richard J. Soltys Productions, 1615 W. Burbank Blvd., Burbank, California 91506. Nevada State Museum has a duplicate negative.
"Gatecliff: American Indian Rockshelter," 19 minutes. Made at Gatecliff Shelter excavation by National Geographic film crew. Submitted by David H. Thomas, American Museum of Natural History.
"Preserving Our Past", 22 minutes. A new film made in the Las Vegas area, under the supervision of Sheilagh and Richard Brooks, UNLV Museum of Natural History.
"Paiute Material Culture", about 7 minutes, short segments on making a tule boat, a cradleboard, and a duck decoy. Filmed by Margaret M. Wheat, Associate in Ethnology, Nevada State Museum, during the late 1950's.
"Broken Treaty at Battle Mountain", one hour, filmed by Joel Freedman, Soho Cinema, Ltd., 508 Broadway, New York, N.Y.

MODELS IN GREAT BASIN PREHISTORY

by

Don D. Fowler

Director, Human Systems Center
Desert Research Institute
University of Nevada, Reno

The purpose of this paper is to review past and present models of Great Basin prehistory in the light of recent discussions of changing paradigms in archaeology, rather than to present a formal history of Great Basin prehistoric research, for which see Fowler (n.d.), Jennings (1973b), Meighan (1961), Rohn (1973) and Warren (1973).

Following Clarke (1972:1-2), we shall loosely define models as "pieces of machinery that relate observations to theoretical ideas; they may be used for many different purposes and they vary widely in the form of machinery they employ, the classes of observations they focus upon and the manner in which they relate the observations to the theory or hypothesis."

It is possible to distinguish several "pieces of machinery" used over the past 125 years to relate observations on Great Basin prehistory to variant sets of implicit and explicit theoretical ideas. Nineteenth century models of Great Basin prehistory grew out of general speculations about the origins and migrations of Amerindians (Fitting, Ed., 1973; Silverberg 1968; Wauchope 1962; Willey and Sabloff 1974; Winsor 1889). Some of these models attempted to account for the pueblo ruins of the Southwest and peripheral areas, including the Great Basin. In general, two contradictory sets of models were advanced to account for pueblo ruins. One set held that the ruins were remains of villages built by peoples who later migrated southward to become the ancestors, variously, of the Aztecs, Toltecs, or Mayas. The other set held the reverse, that pueblo ruins were remains of "outposts" of some ill-defined Mexican "empire," which had expanded northward and later contracted.

Proponents of the latter set included Bancroft (1875, IV:713-714), Angel (1881:20) and Montgomery (1894:340). Angel (1881:489-491) also cited one source who thought that pueblo sites near Bunkerville, Nevada were of Spanish origin. Lewis Henry Morgan (1881:23) was a proponent of the former set of models. He thought it "extremely probable . . . that the original ancestors of the principal historic tribes of Mexico once inhabited the San Juan country" (the Four Corners area). He also thought that the "principal tribes of Yucatan and Central America," as well as the "Mound Builders" of the eastern United States were similarly derived from the San Juan "village indians." Great Basin peoples, however, had a different origin. Morgan thought that the "Utahs" of the Great Basin came from a "center of dispersal" in the Columbia River basin as part of a general spread of the "Ganowanian Family." (Morgan's "Ganowanian Family" was based

on his grouping of Amerindian kinship terminological systems in his earlier Systems of Consanguinity and Affinity (Morgan 1871:140, n. 1).)

Little attention was paid to non-architectural Great Basin sites in the 19th century, excepting petroglyphs which were sometimes interpreted as evidence of early Chinese contacts on the West Coast (Loew 1876). Although various "mound" sites in Utah were pot-hunted in the 19th century, there was no systematic excavation in the Great Basin until Judd's (1916, 1926) work at Paragonah in the 1910's. Meanwhile, excavation had accelerated in the Southwest (Rohn 1973:190-193; Willey and Sabloff 1974:46-47). Then, with the introduction of stratigraphic methods (Nelson 1916) and seriation techniques (Kroeber 1916), Southwestern archaeology took on a new aspect, ultimately permitting Kidder (1924) and others (Kidder 1927) to formulate the Pecos Classification of model. Under the Pecos model, "Puebloid" sites within the Great Basin were lumped into a "Northern Periphery," a concept further strengthened by Morss' (1931:76-77) delineation of the Fremont culture. With the advent of dendrochronology, a rough "stage" chonrology was developed for the Southwest, including a hypothetical "Basketmaker I" stage of unknown time depth.

Between 1923 and 1933 several writers postulated the existence of an "early basic culture stratum" in the Great Basin (Lowie 1923; Kroeber 1923; Krieger 1928; Zingg 1939). Archaeological evidence for such a "stratum" was found in Steward's (1937) cave excavations around the Great Salt Lake and in Cressman, et al.'s work (1940) in southern Oregon. Nonetheless, in his 1940 model of Great Basin prehistory, Steward (1940) explained away such evidence and attempted to fit all of Great Basin prehistory into a time frame of Basketmaker III and later, as defined by the Pecos model (Jennings 1964:154; Fowler, Madsen and Hattori 1973:79).

Steward's reasoning well illustrates the pitfalls of the "historicalist" paradigm (see below): On typological grounds he equated Great Basin basketry with Basketmaker III basketry. Since traits from a "center" are, by definition, older than traits in a "periphery" Great Basin basketry could not be older than Basketmaker III basketry, which was dated by dendrochronology at less than two millenia. Hence the "chronological squeeze" applied by Steward to the Great Basin.

Martin, Quimby and Collier's (1947:223-230) subsequent review of Great Basin trait clusters, which they interestingly called "civilizations" (!), did suggest more time depth than Steward, but did little else to clarify matters.

With the advent of C-14 dating in the 1950's, Jennings (1957, Jennings and Norbeck 1955) was able to advance the Desert Culture concept which has been the dominant model of Great Basin prehistory since. Indeed, a generation of archaeologists have devoted much of their professional lives to exegesis, apology or refutation for, and of, this concept.

One of the most frequently cited names in archaeological literature since 1962 is Thomas Kuhn (1970), an intellectual historian whose book The Structure of Scientific Revolutions provides a model of how scientific paradigms change. Seizing upon Kuhn's ideas, some guidon bearers of the "evangelical sect" (Taylor 1973:30) of "New" archaeologists insist that archaeology is currently in the midst of a transition from one paradigm to another (cf. Sterud 1973). I agree there is a transition going on, but not to a single paradigm. Rather, I agree with Leone (1973:15) that there are currently several "proto-paradigms" floating about.

Some writers (Leach 1973; Leone 1973) identify four more or less sequential paradigms in the general historical development of anthropology: classical evolutionism, historicalism, functionalism, and structuralism. Both Leone (1973) and Leach (1973) suggest that archaeology, as a part of anthropology, has historically suffered from "paradigm lag." That is, archaeology is always a paradigm behind the rest of anthropology, e.g. Leach's assertion that archaeology a la Binford is essentially functionalism in disguise. (Much of Binford's and his critics' polemics over "science vs. history" in archaeology sound quite like the debate between Kroeber and Radcliffe-Brown in the 1930's (Radcliffe-Browne 1935).) If Leone and Leach are correct, with recent exceptions, Great Basin prehistory is two paradigms behind. Since the 1920's, models of Great Basin prehistory, including the Desert Culture concept and its changeling children the Desert Archaic and Western Archaic (Jennings 1957, 1964, 1968, 1973a), have been framed within the historicalist paradigm. The paradigm derives principally from the methodology and assumptions of the culture area, age area and Kulterkrieslehre hypotheses (Fowler, Madsen and Hattori 1973:76-78). Within the historicalist paradigm, the "proper aim of anthropology and archaeology is "historical reconstruction:" to "know" culture history is to understand the spatial and temporal distribution of "traits." The idea of "traits" in turn derives from a conception of culture as an agglomeration of "things," "shreds and patches," to use Lowie's phrase, rather than as process or system. A central problem is that "traits" as the basic units of analysis have never been logically, and often not even operationally, defined to everyone's satisfaction.

Thus, a trait, or a type, becomes whatever you want it to be. In the Great Basin, this problem underlies debates over the validity of the Desert Culture concept. Jennings, as a trait "lumper" sees one general tradition of great time depth. His critics as "splitters" disagree and posit a variety of "cultures," "traditions," or "complexes" (Jennings 1973b; Hester 1973: passim).

Clarke (1972:6-7) lists four "new" paradigms in archaeology: (1) a morphological paradigm, involved with artifact assemblage systems and their intrinsic regularities; (2) an anthropological paradigm, concerned with patterning of archaeological data in relation to "paleo" social structures; (3) an ecological paradigm, concerned with cultures as integral parts of environmental and ecological systems; and (4) a geographical paradigm, concerned with settlement patterns and networks.

None of these are really paradigms in Kuhn's (1970:10) sense of the term. None of them implicitly defines legitimate problems and methods of research to the exclusion of the others. They are, at best, approaches or "proto-paradigms." They are neither mutually exclusive nor fully complementary, between and among themselves, or in relation to the historicalist paradigm. For that matter, none of them is really "new" (Stevens and Agogino 1972).

Since Steward's (1938:260-261; Murphy 1970) formulation of the cultural ecology viewpoint, most models of Great Basin prehistory have been ecologically oriented, although more within a culture-as-things framework than one of culture-as-process or culture-as-system. "Traits" are seen as means of adaptation to ecozones and ecotones and the resources therein, as for example, the generalized Desert Culture concept, various lacustrine adaptations or patterns (Heizer and Napton 1970; Weide 1968), or Swanson's (1972:186-195) big-game and mountain resource-oriented Bitterroot pattern.

Some recent research strategies in the Great Basin have more strongly emphasized the system and process aspects of the ecological and geographical "proto-paradigms." One advance has been to focus on whole valleys rather than single sites as the significant "units" of archaeological study, e.g. O'Connell and Hayward (1972), Thomas (1972, 1974), Weide (1968), Berry (1972), and Swanson (1972). Within such "units" site patterning and ecosystem relationships become more meaningful and questions about culture-as-process and culture-as-system can fruitfully be posed (Leone 1973:18).

We cannot, however, abandon the central concerns of the historicalist paradigm, typology and chronology (Leone 1973:26; Thomas 1974:3). There are still typological and chronological problems to be resolved (Hester 1973:passim).

Less work has been done with the anthropological "proto-paradigm" in the Great Basin, in part because archaeology in general is weakest in understanding relationships between artifacts and behavior, particularly patterned social behavior. We can only echo Hole's (1973:26) call for a "set of explicitly stated theories pertaining to relations between artifacts and culture" (Stanislawski 1973). Such theories are necessary before we can properly develop what Thomas (1974) calls "paleoethnology."

In sum, a history of models of Great Basin prehistory reminds us that models, or paradigms, are not eternal verities, but useful tools, "pieces of machinery" through which and by which we can learn more about Man, in the Great Basin, and elsewhere.

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PALEOINDIAN CULTURAL ECOLOGY: CHINA LAKE

by

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ABSTRACT

There is some evidence that foraging bands of people have used various parts of the basin of Pleistocene Lake China since a Dry Lake stage (Smith 1968) about 29,000 years ago. This use has been a sporadic continuum over time, controlled by fluctuating levels of the lake. A long series of cultural/technological developments took place during this interval--some were the products of regional innovations; some were introduced by new groups of migrants from Asia and the North. We have been able to recognize tool inventories suggesting the following progressions: i.) A Core Tool Tradition (MacNeish 1971); ii.) Late Wisconsin Cultures; iii.) Proto-Clovis; iv.) Clovis; v.) and Pinto. Patterns of land use can only be identified for the 3 latter cultural phases.

The China Lake Environment

Pleistocene China Lake was a continually fluctuating body of water in a basin now called Indian Wells Valley, in the most northwesterly corner of the Mojave Desert. This area lies about 19 km. east of the southern end of the Sierran escarpment face, in Inyo and Kern Counties, California (Fig. 1). In this region, the Mojave Desert has been, periodically, a cold steppe containing a chain of pluvial lakes, China, Searles, Panamint, and Manly, and should therefore be considered a portion of the Great Basin lakes country. The environment appears to have been unusually favorable for early peoples and a terminal Rancholabrean fauna (Fortsch 1972).

During late stadials and interstadials, these lakes rose or receded frequently (Smith 1968, Fig. 4), and Lake Searles (best documented of the China Lake system) changed from full to dry within a few hundred years (Fig. 2). In the case of China Lake, we at present know the dates only of two penultimate high stands, measured at the Basalt Ridge Site as higher than the 2,240 foot contour. The lake was brimful twice in rapid succession, 13,300 $\pm$ 150 years B.P. (UCLA 1911A) and 12,200 $\pm$ 120 years B.P. (UCLA 1911B), with a recession in between. After this, the climate warmed and dried, and the water level sank, exposing a bay 7.1 meters below the Basalt Ridge, and tufas and a soil had time to form at beach elevation by 10,800 $\pm$ 310 years B.P. (GX 3446).

Methods of Work

The information for these studies was put together from an extensive program of interdisciplinary work which included mapping with instruments of 15 large squares, and reconnaissance of 2 long, narrow transects (Fig. 3) done on foot. All this work was designed to explore the research potentials in archaeology, geology and paleontology of the restricted testing ranges of China Lake Naval Weapons Center. We ranged outside of the Naval Base for only a few kilometers at the extreme north end of Transect A, shown as the longer of 2 squiggle lines in Fig. 3. These transects took us across great stretches of sterile rock and gravel, led us into one unbelievably rich site area (it had never been touched), along basalt cliffs behind beds of wildflowers and covered with petroglyphs which had not previously been recorded.

Fig. 1. Map of California showing location of China Lake

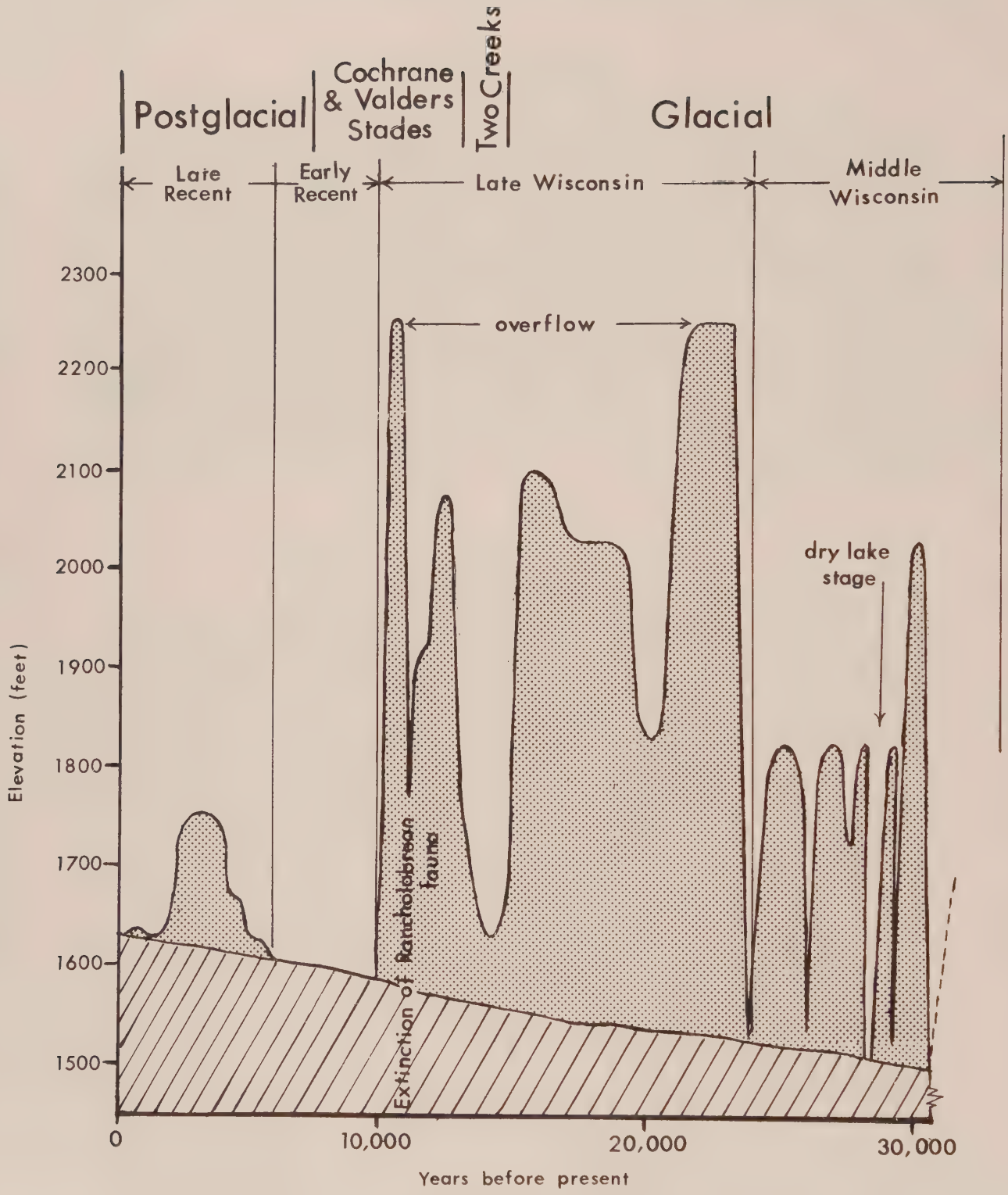

Fig. 2. Fluctuations of Lake Searles, in Lake China System. (Smith 1968, Fig. 4)

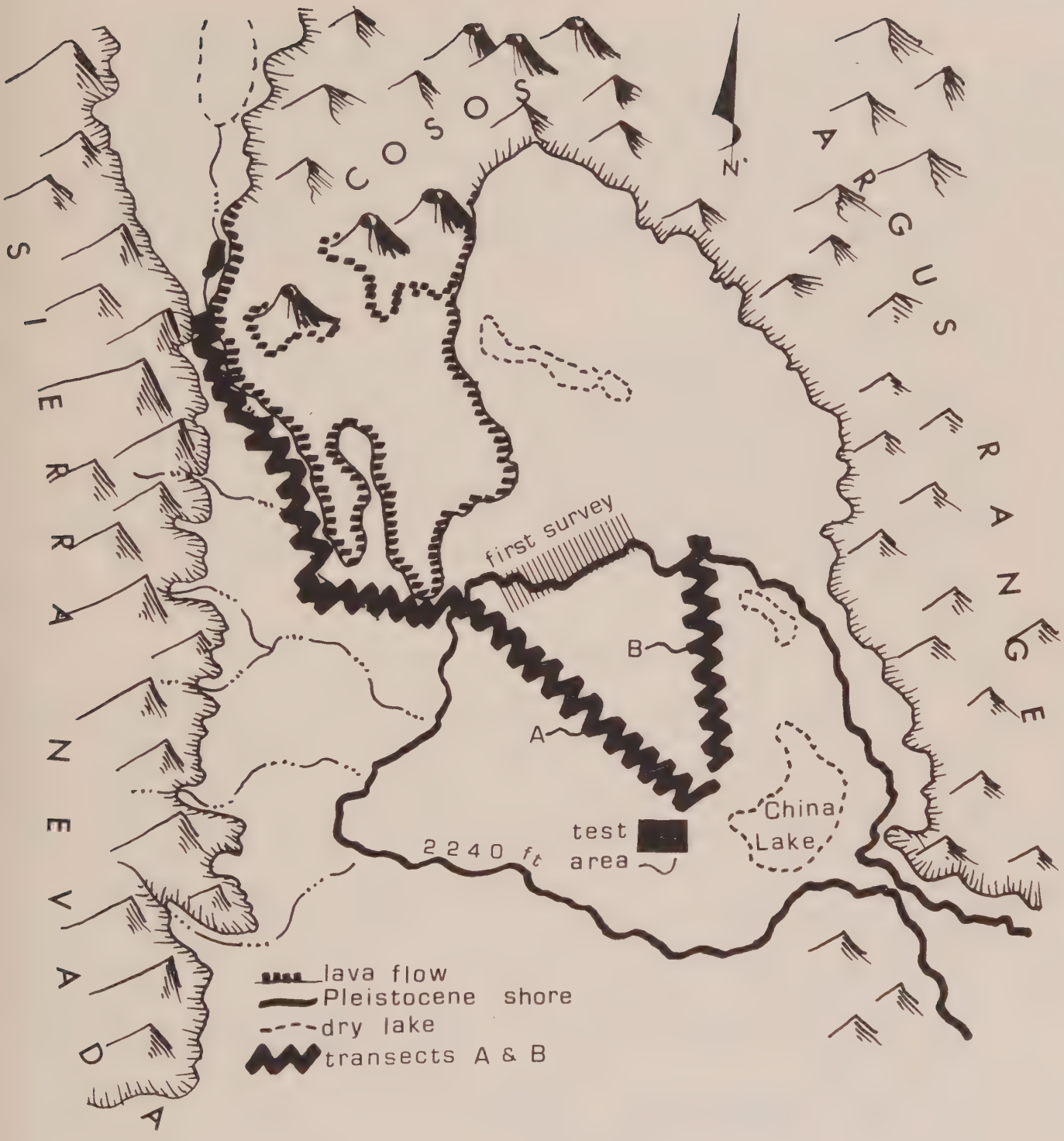

Fig. 3. Sketch map of Indian Wells Valley (Lake China Basin) showing various kinds of work: first survey (barred rectangle); long transects A and B (heavy squiggle lines); and the mapped test area (black rectangle).

The test area, shown at bottom center of Fig. 3, was set up specifically for controlled observations of relationships of people, animals and topography, and to create a permanent record of these variables for further study. Twenty-four instrument stations or "Stakes" were originally established. Five more were added later, either to test hypotheses (like Stakes 26 and 27) or because they were unusually informative (like the Stake 25 complex). Mapping was done with a theodolite or with plane table and alidade, generous loans from the Navy. An enormous amount of terrain and materials remain undisturbed for future investigation.

Our methods in the field included making on-the-spot 5 X 8 inch edge-punched cards, recording the code number, location, material, and a drawing of each identifiable object found by our rod people (Davis 1975). We also developed a system for harvesting artifacts quite as thorough as it was repetitive and boring, but it was incredibly productive. The entire system is explained in Davis (1975). The resultant artifact sample provides us with a theoretical base for generating hypotheses, previously unknown for western PaleoIndian cultural stages and life styles.

Land Use Pattern A: Clovis Phase

The Basalt Ridge site locality, mentioned previously, consists of a high ridge with an overview of open country to the west and south and with a view of a large bay and a small cove between the bay and the ridge. The cove does not appear to have seen use during the Clovis Phase, or is there good evidence for its use by Proto-Clovis and earlier cultural groups. The south shore of the bay and shoreline sediments are full of animal bone, chiefly mammoth, (Fig. 4), and are littered with flakes and tools, both of the Clovis and Pinto Phases (Fig. 5). We have some indications that Clovis camps are located along the spine of the ridge, mostly buried under gravels. The shoreline was a butchering and processing locality. The lithic evidence consists of a few sharpening flakes, a biface or two, and a buried pounding and grinding rock next to a mammoth bone, scores of tiny finishing flakes, the residue of tool resharpening and manufacture, and dozens of flake saws with denticulated, hacksaw-size teeth, the Upper Paleolithic steak knives of the period. These were the major implements for meat cutting. Small spurs or spokeshaves on many of them suggest that they belonged in the women's toolkits. This tells us something about their role in preparation of meat and jerky.

The ridge above would have given hunters on lookout a fine view southwestward across savanna pastures which were probably a

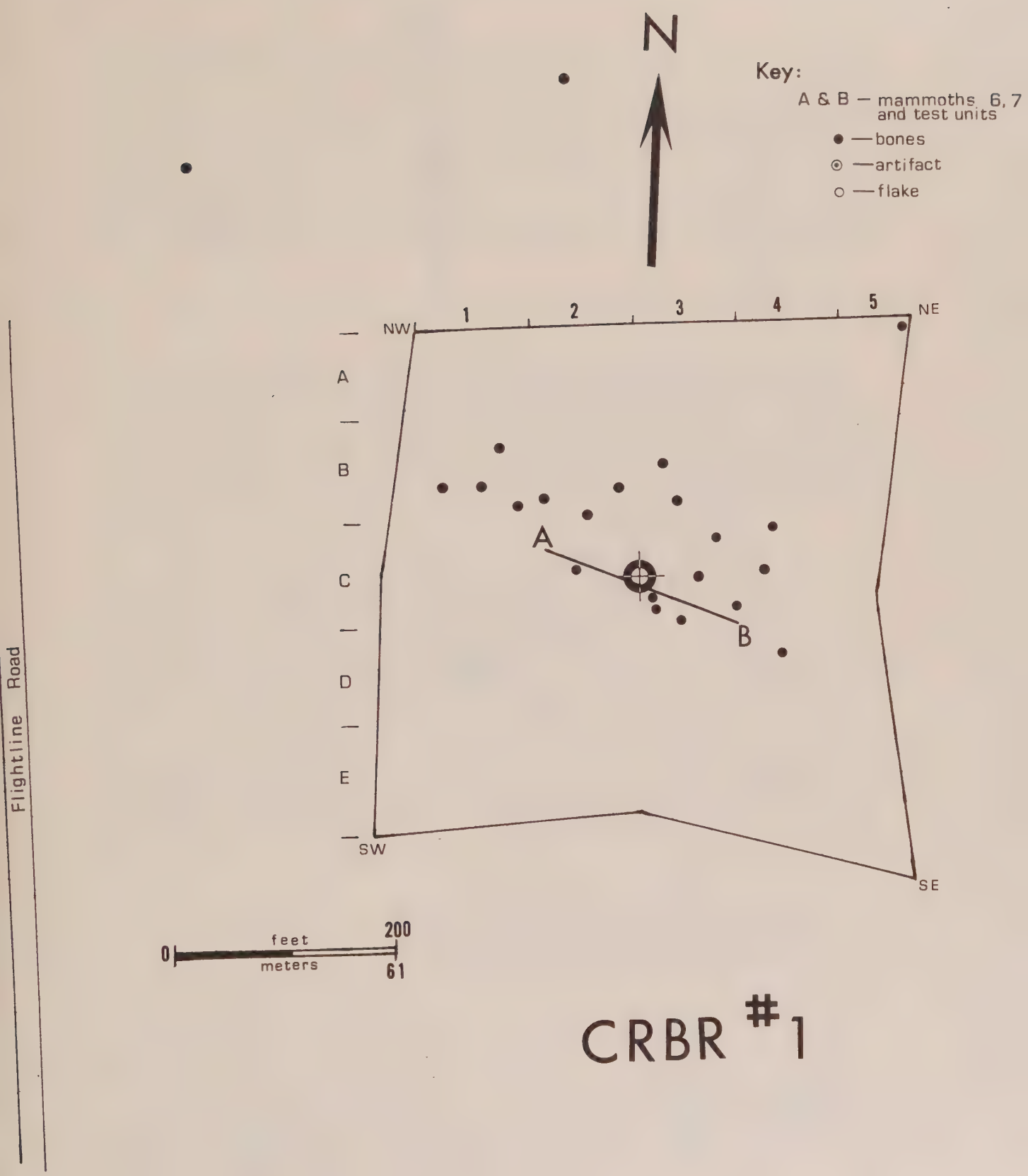

Fig. 4. Distribution of bone in Basalt Ridge survey.

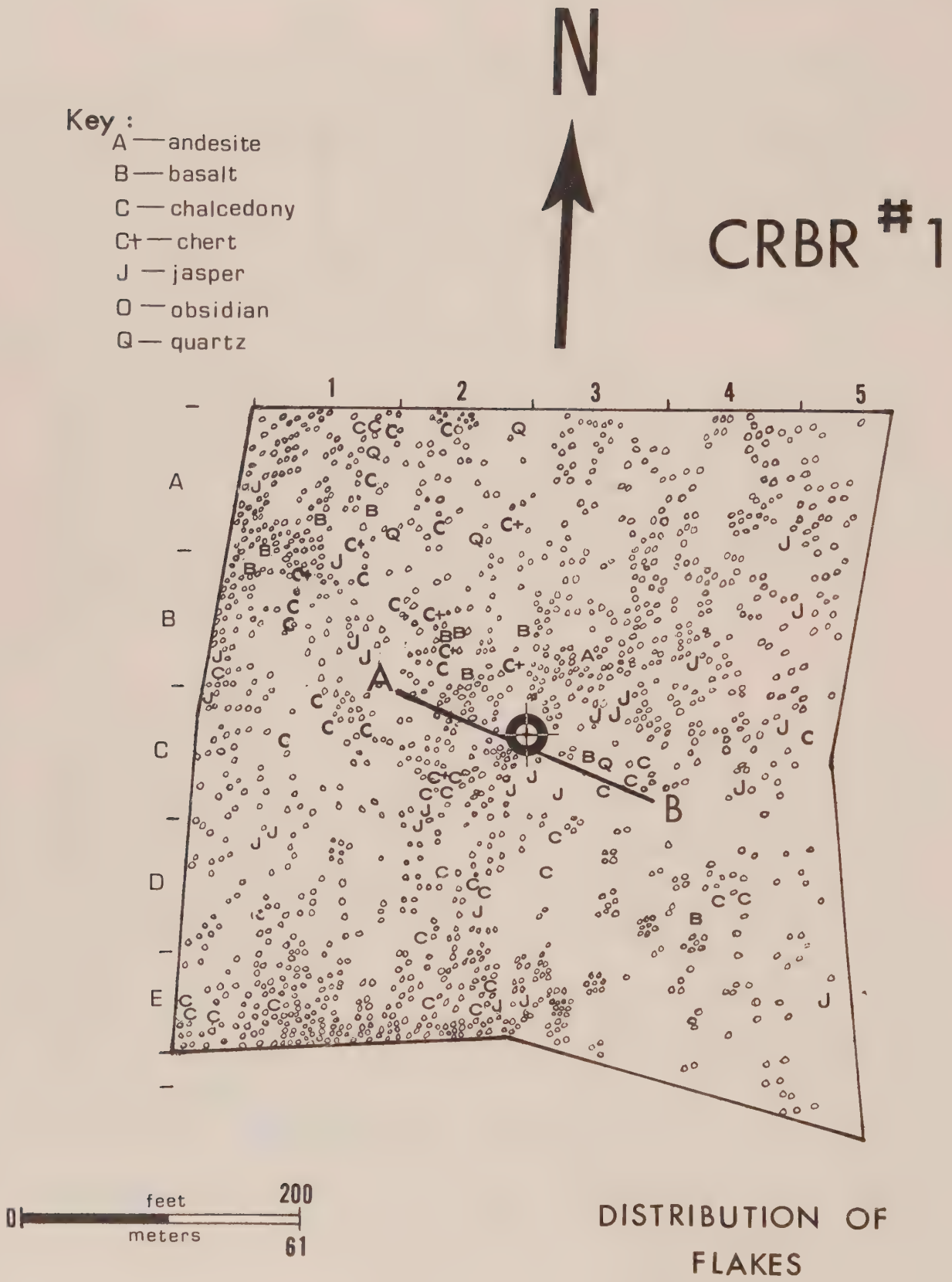

Fig. 5. Distribution of flakes and types of stone, Basalt Ridge.

gathering area for plant foods and utility materials as well. This combination of features, a well-drained camp area, an overview, a source of water, and a natural bog trap correspond well with Judge's model (1973) for Folsom camps in the Central Rio Grande Valley of New Mexico. The camping and processing activities in relation to a body of water are much the same at Basalt Ridge as those illustrated by Judge and Dawson (1972) in Fig. 3B. At the Basalt Ridge, the Clovis Phase was associated with an extensive arm of the lake.

Land Use Pattern A: Pinto Phase

After the Basalt Ridge locality was used by foraging Clovis bands, the area became dessicated once more and there was only sporadic human or animal activity on this side of the valley until the lake rose again above the 2,200 foot contour line, perhaps 6,000 years B.P. This was a lower lake stand and the embayment may have been little more than a marsh, since a few stemmed or notched knife/points are to be found in the middle of the present playa.

The Pinto Phase camp is some five to seven meters lower than the hypothetical Clovis campground, in a more sheltered situation beside a small inlet. The surface of this camp is strewn with flakes, artifacts and fragments of mammalian tooth enamel, mammoth, camel and possibly horse. Like most of the other cultural stages which we can identify, the Pinto Phase was oriented toward water, chiefly as the main feature in general PaleoIndian trapping technology. Over a span of 30,000 years, water occurred in a number of situations in this valley: an extensive lake; a retreated lake remnant; sloughs; sluggish or seasonal streams; swamps and salt marshes. During the Pinto Phase, water orientation was toward a swamp with islands.

Land Use Pattern B
Stake 25--A Test of a Hypothesis

In 1968, Jerry Dawson wrote to me that his own investigation of PaleoIndian sites in New Mexico indicated that these people had a preference for setting up their camps with specific orientations to water, prevailing winds, and the habits of food animals. They frequently camped on the north or northeast sides (the downwind quarter) of pond basins and on some elevation commanding an overview of the country. From this combination of features, I inferred a practice of hunting upwind, like other carnivores, and we selected two stakes--old 13 and new 25--as test areas for the hypothesis that s similar configuration of natural features had long been preferred in the basin of China Lake.

Stake 12 is a campsite knoll at the northeast edge of a large basin, now filled with playa sediments. Stake 25 is a north-south trending bench (the result of a fault uplift) running along the eastern margin of a narrow playa almost a kilometer in length (Fig. 6). At both stakes 13 and 25, small areas equivalent to one-fourth of a stake were laid out, each with its own instrument station. These were controls for postulated differences between camp localities and hunting regions as reflected in stone tools. The controls were on opposite sides of the playas from the camps (see Fig. 6 for the whole Stake 25 complex). Stake 26 was the hunting terrain control for Stake 25, while Stake 27 (Fig. 7) was a hunting control for three different surveyed camps.

The 13-26 and 25-27 pairs gave good support for a downwind camp and upwind hunting range hypothesis since the artifact inventories differed markedly both in quantity and kind as follows. Stake 25: bases of knife/points; many pounding/grinding rocks; a full complement of all tools used by the resident cultures (Core Tool, Late Wisconsin and Proto-Clovis); and numerous flakes of the two latter stages. The control, Stake 27, had two flakes, two knife/points tips, 1 crescent and a few scrapers. At this stake, the distribution of bones and artifacts is significant as shown by median lines A-A' and B-B'. They are so close together that there is little doubt of the association. It is also of interest that the two distal ends of knife/points are not of commonly recognized Proto-Clovis or Clovis designs. They have keener points, much better for piercing. Since we had tentatively associated this form with the Pinto Phase, the matter needs further investigation by excavating several of the buried camps.

Land Use Pattern C
A Proto-Clovis Women's Work Locality

A toolkit representing several kinds of campwork and women's manufacturing was concentrated in the southwest quadrant (Quad. A) of Stake 8. The cluster is on the north rim of a large playa. Fifty meters farther northward, a low, sand-covered knoll is probably the location of the main campsite, now buried.

The tools in Quadrant A were near a major concentration of animal bone. In this case, however, no cultural association can be determined. The implements are all shaped from amorphous flakes, a characteristic of most components of all China Lake inventories except those of the Core Tool Tradition. A number of the Quadrant A artifacts are suited to cutting, trimming and peeling such fresh shoots as willow, suggesting some sort of basketry and the manufacture

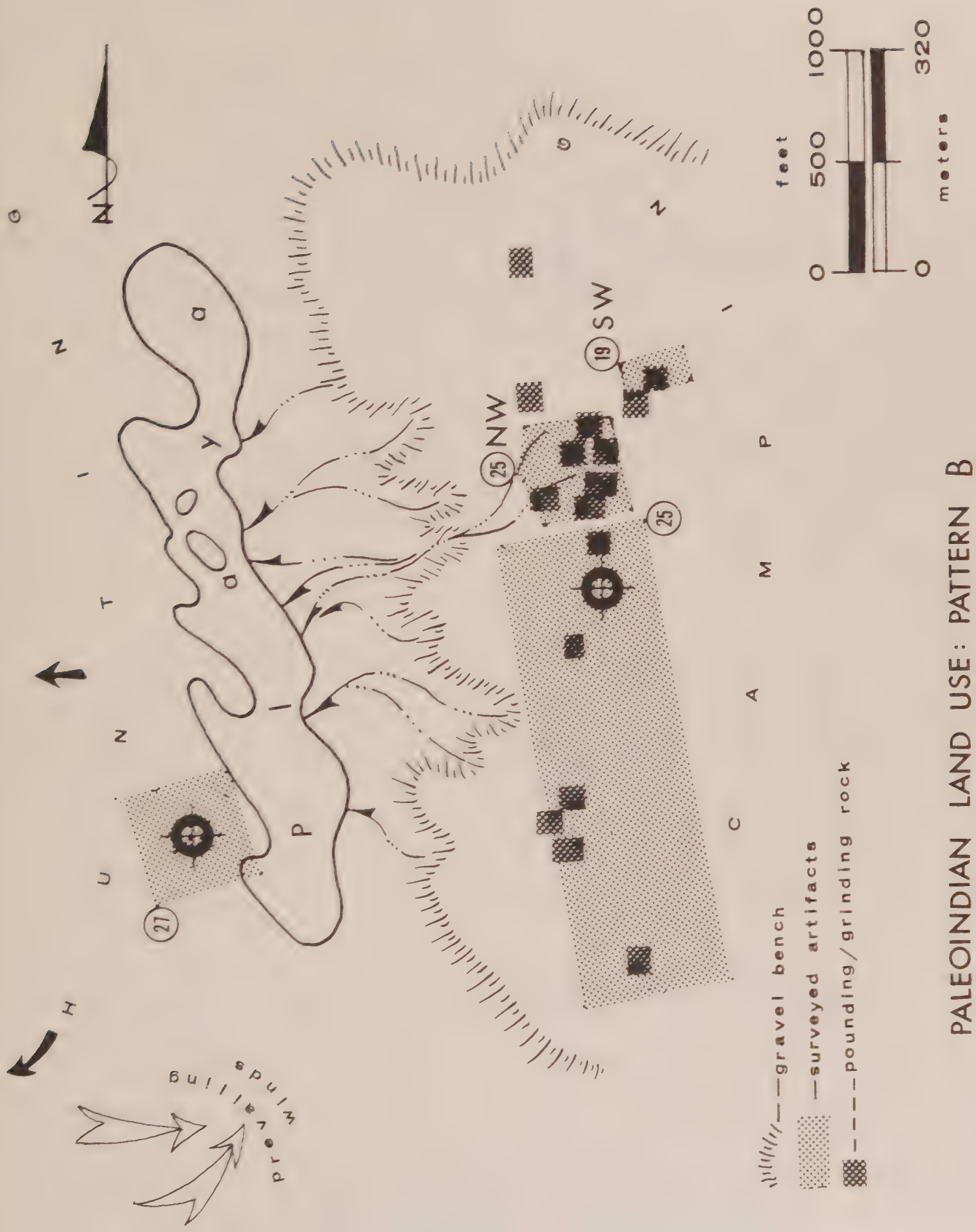

Fig. 6. The Stake 25 complex of mapped localities, Land Use Pattern B.

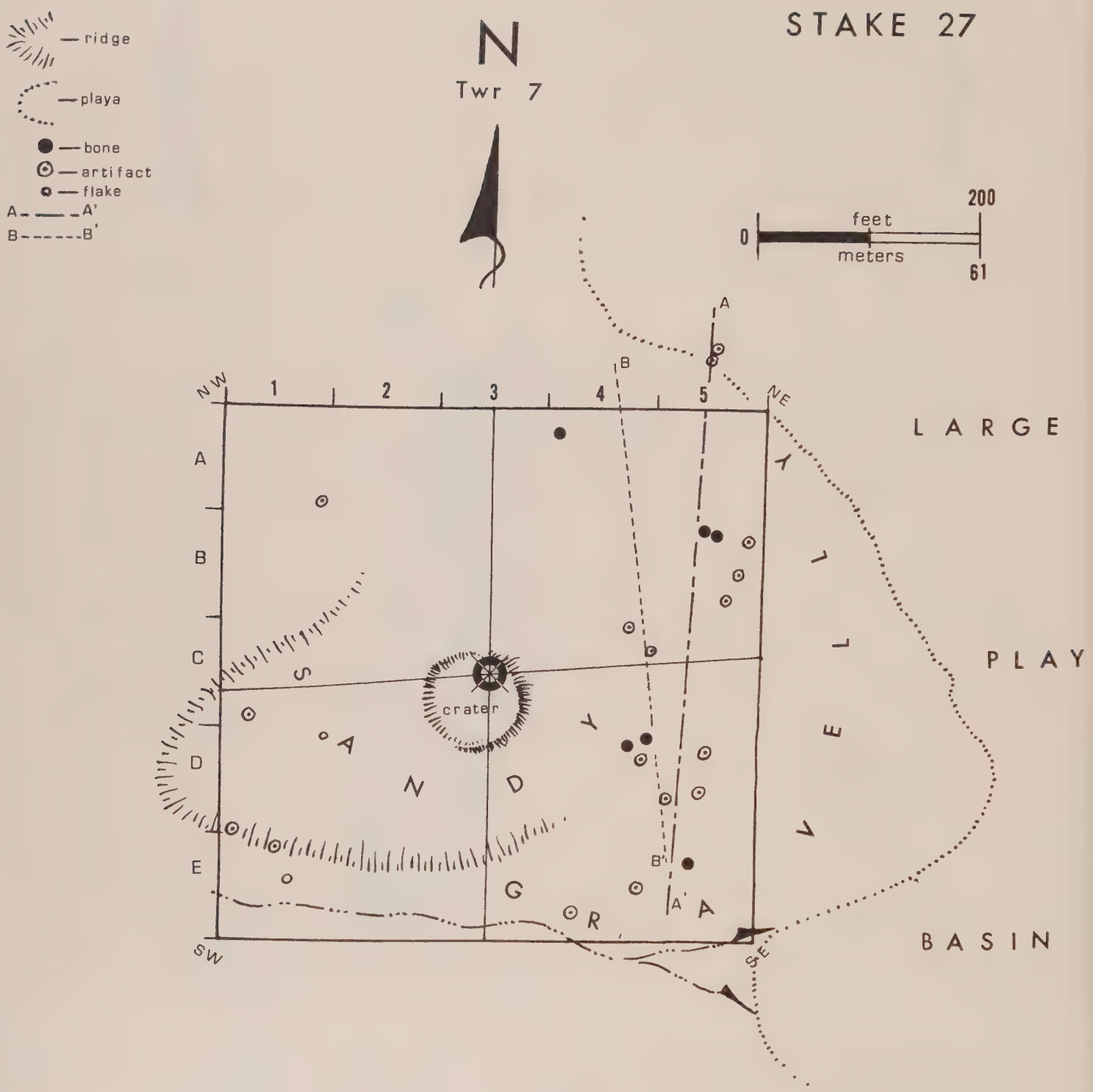

Fig. 7. Stake 27, the control square for Stake 25. Note the close correspondence of bone and artifact distributions A-A' and B-B' suggesting a culturally determined relationship.

of light gear like cradle packs (Wheat 1967). Cattails were possibly used for mats and shelter as well, but this work cannot be inferred from the implements. Fleshing fresh hides and dehairing those that had been buried in the mud for a while (Steinbring 1966) were probably important work routines. The fleshers were probably very finely toothed bone which has disintegrated. (In this environment, bone had to be buried in mud and mineralized immediately to ensure preservation). The six fragments of hafted end scrapers could represent instruments for the dehairing process.

Small saws, spur beaks, broad beaks, crescentics and various cutting or scraping edges complete the tools from this small locality. There were no hunting implements such as crescents or knife/points, nor were there any butchering tools. Only a single pounding/grinding rock fragment was on the site. The crescentics (mentioned above) are composite tools combining spokeshaves of several radii; beaks and saw edges. The women evidently scrounged flakes (old or new) from the camp area and reworked them for special purposes.

The Buried Sites

When China Lake filled, wholly or partially, the landscape was inundated, covering everything with various depths of sand, gravel and mud. When the water receded, the valley floor was exposed again, beginning with the camp knolls and ridges, and soils began to form in places where grass stabilized the surface, while bare surfaces began to erode due to wind and rill action. A year ago we discovered that cultural materials at Stake 1 (Fig. 8) were still covered beneath the mantle of sand shown in the drawing. I want to describe the circumstances of this discovery because they illustrate beautifully the importance of making very detailed maps of exposed site surfaces.

Plane table maps of Stakes 1 and 24 had been completed for more than a year when George Smith, our geologist, visited the locality and observed that little piles of hard, clinker-like material (which he called "flaggy sandstone") seemed associated with nearly all the bone and most of the artifacts. He suggested that we determine the stratigraphic position of this formation. We therefore returned to the stakes with a crew and mapped the concentration of clinker scraps, shown as black triangles in the drawing.

The results were surprising. The circular configuration around Stake 1 showed us several facts. First, the flaggy sandstone

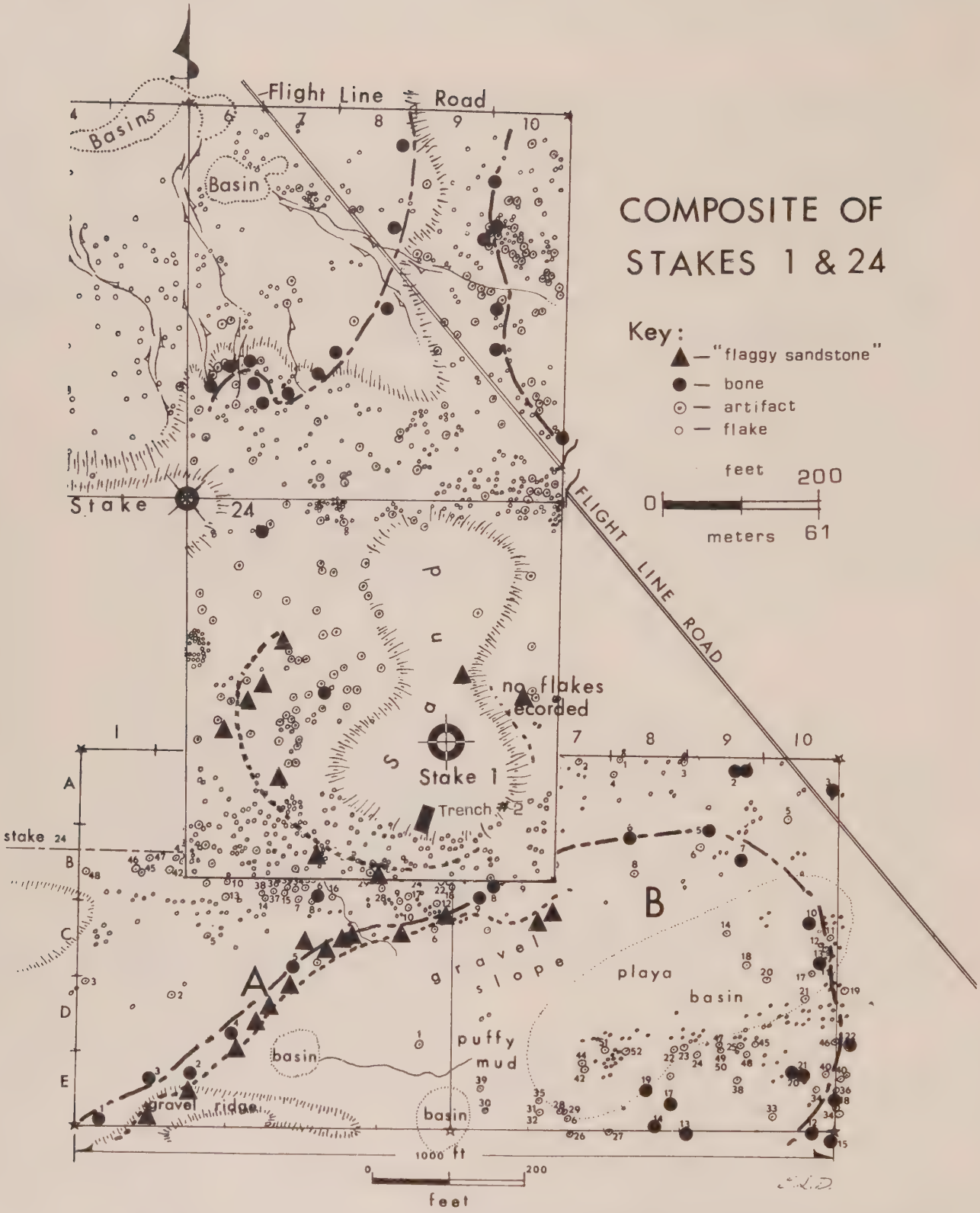

Fig. 8. Composite map of Stakes 1 and 24 showing arcuate distribution of bone along old shorelines (black circles) and association with flaggy sandstone (carbonaceous clay pods from a paleosol) which are shown as black triangles. There is also a correlation between this paleosol and the artifacts.

is peculiar to a layer underlying the Stake 1 knoll and being at present eroded and exposed, chiefly by water runoff. Second, at this particular elevation, the sandstone is closely associated with artifacts and flakes which are being washed out from under the mantle of sand and gravel as it gradually retreats. Third, the arcuate distribution of flaggy sandstone and bone at the bottom of Fig. 8 is at a lower elevation and appears to describe a shoreline of a formerly large pond basin--one of the hunting traps of this site area.

These bits of information made it possible for us to predict that artifactual material would probably be found beneath the sandy mantle, a postulate which was verified by the discovery of flakes upon and in a fossil soil disclosed by Trench 2, just below the stake. The soil has a date of 10,275 $\pm$ 165 years B.P. (GX 3442). A number of excavations should be made beneath various sand covered knolls where our stakes are located. There are also a number of levels of flaggy sandstones, each of which should be investigated for cultural associations.

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HARRIS LINES, ENAMEL HYPOPLASIA, AND SUBSISTENCE CHANGE IN PREHISTORIC CENTRAL CALIFORNIA

by

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ABSTRACT

Hypoplastic enamel defects and radiopaque transverse lines in the long bones (Harris lines) have been heralded as potentially useful indicators of health conditions in prehistoric populations. Both result from temporary cessation of growth processes due to similar types of disease, malnutrition or other metabolic insult. Frequency of both conditions was determined from a series of young adults from Early, Middle, and Late period sites in the lower Sacramento-San Joaquin Valley, California. Femoral transverse lines decline in frequency through time. Hypoplasia is least common in the Middle period. These changes are discussed in relation to archaeological knowledge of subsistence adaptation in this area.

Introduction

The expansion of archaeological research in recent years has been accompanied by an increasing interest in paleopathology and its use in interpreting the social and biological adaptations of prehistoric populations. Two pathological traits which have drawn some attention in this regard are radiographic "lines and bands of increased density" (Harris lines) in the long bones and hypoplasia of the dental enamel. Both have been heralded as potentially important indicators of prehistoric health conditions (Wells 1961, 1963, 1964, 1967; Brothwell 1963; McHenry 1968; Woodall 1968; Allison, Mendoza and Pezzia 1973, 1974). Both of these traits involve the cessation or alteration of normal growth processes and they have at least partially overlapping etiologies.

Enamel hypoplasia is a disrupted condition of the surface of the dental crown consisting of pits or grooves in the outer surface of the enamel (Fig. 1). These vary in severity from exaggerations of normal perikymata (wave-like imbrications of the enamel surface) to broad transverse bands completely exposing the underlying dentine. The labial (buccal) surface of the tooth is more frequently affected.

These defects result from disturbances of enamel matrix formation in the developing tooth, but the triggering mechanisms are not well understood. A number of factors have been suggested, including hypoxic levels in the blood supply to the ameloblasts. It is apparent however, that a variety of systemic disturbances (e.g. measles, pneumonia, syphilis, malnutrition, maternal rubella, and

Fig. 1. Hypoplastic lines on the enamel of a mandibular canine.

various birth defects) produce or are associated with the development of identical enamel defects through the same metabolic channels (McHenry and Schulz MS). Since hypoplasia affects the developing (unerupted) teeth, it is possible, from a knowledge of enamel formation chronology, to determine the age at which the insult took place.

Harris lines consist of thin plates of dense bone which form at the epiphyseal ends of immature bones. These plates, visible radiographically as lines or bands of increased density (Fig. 2), maintain their position as bone growth continues past them (Garn, Silverman, Hertzog and Rohman 1968). Unlike hypoplastic lines, Harris lines are formed not from growth cessation but rather from cessation followed by a rapid growth spurt. A number of types of disease and trauma have been associated with formation of these lines, and these are briefly reviewed elsewhere (McHenry and Schulz MS). Since several of these precipitating insults (malnutrition, pneumonia, rickets, maternal syphilis, whooping cough) have been implicated in the formation of enamel hypoplasia a significant correlation between presence of the two conditions is to be expected. Although Harris line formation is a frequent sequel of disease or trauma, many lines appear which are unrelated to clinically observed disease episodes, and there appears to be no difference in line frequencies between healthy and chronically undernourished children of the same ethnic group (Dreizen, Spirakis and Stone 1964). Because of this, these lines must be considered a mediocre indicator of individual health histories. Nonetheless, greater frequencies should be expected in populations on a feast-famine dietary regime than in either chronically undernourished or continuously well-nourished populations.

In recent years we have conducted a series of studies on Harris and hypoplastic lines among prehistoric California Indians. These have included studies of Harris line frequency changes through archaeological time (McHenry 1968), age-profiles of hypoplasia occurrence (Schulz and McHenry 1975), and occurrence correlation of the two conditions in individual young adults (McHenry and Schulz MS). Because of the suggested value of these effects in understanding prehistoric health conditions, we decided to investigate the possibility of frequency changes through prehistoric time in a series of populations with changing subsistence strategies. Because of etiological similarities between Harris lines and enamel hypoplasia, and because of similar age-at-formation profiles, we expected them to show parallel frequency trends through time. We also expected that both would correlate well with other archaeological evidence for major subsistence adaptations.

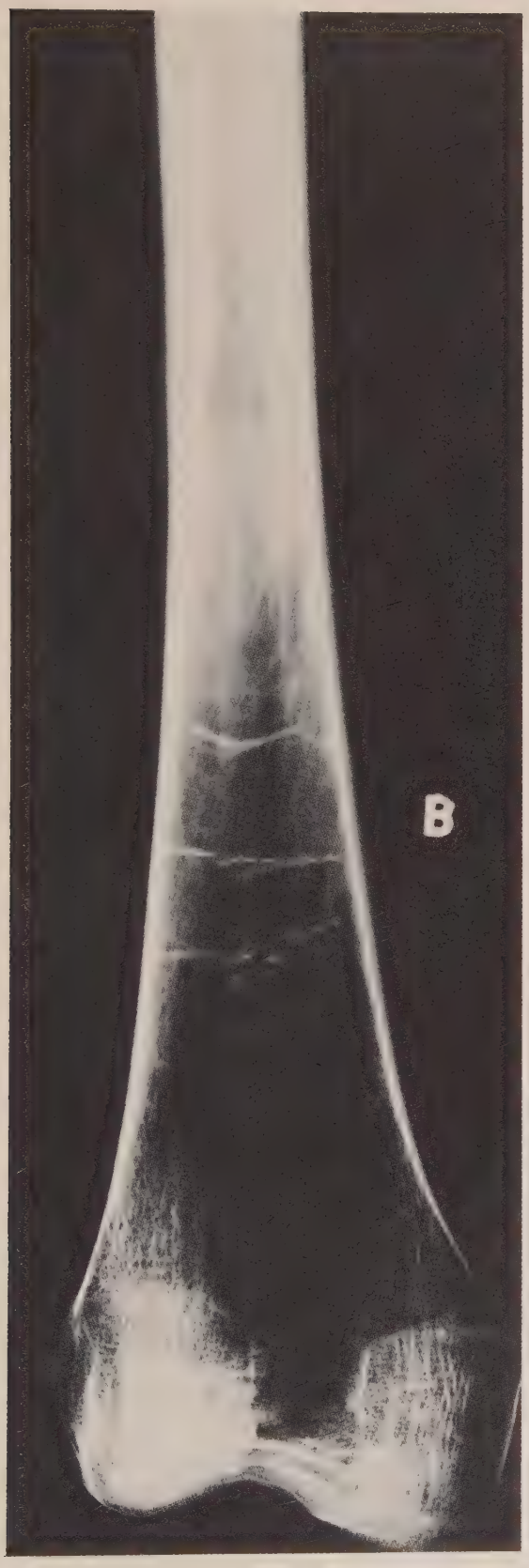

Fig. 2. Harris lines seen in the x-ray of the distal femur.

Populations

The skeletal materials used are located in the Lowie Museum of Anthropology, University of California, Berkeley, and the Museum of Anthropology, University of California, Davis. All derive from prehistoric sites in the lower Sacramento-San Joaquin Valley, California. These sites are classified into three major cultural periods which succeed each other through time (Beardsley 1954; Fredrickson 1974). Cultures of these three periods represent hunter-gatherer subsistence economies, but specific adaptations shifted dramatically.

Early Period (Windmiller Pattern). 2500-500 B.C. This complex is characterized economically by large leaf-shaped and stemmed projectile points (presumably used with the atlatl), little fishing equipment, and a marked scarcity of plant processing tools. Heizer (1949) and Ragir (1972) postulate that subsistence focused primarily on hunting large mammals.

Middle Period (Berkeley Pattern). 500 B.C. - A.D. 500. This complex appears to be economically transitional between the preceding and following periods. Use of the atlatl is well-documented and salmon fishing implements become increasingly important. Mortars and pestles diagnostic of acorn utilization make their first appearance. Hunting appears to decline somewhat in importance, with correspondingly increasing reliance on fishing and plant foods - particularly acorns.

Late Period (Augustine Pattern). A.D. 500 - 1840. This complex is characterized by small projectile points indicating adoption of the bow, but even more important is the major reliance on storable plant (acorn) and fish (salmon) resources. This final adaptation is that shared historically by the Valley tribes of central California (Baumhoff 1963; Ziegler 1968). Recent archaeological research has documented an additional major reliance on lacustrine resources not emphasized in the ethnographic literature (Schulz and Simons 1973; Schulz 1974). Judging from numbers and size of sites, this Late adaptation corresponds to a major increase in population.

Methods

The distal femur was selected for the study of Harris lines since this bone showed the highest frequency in a previous study of

these populations (McHenry 1968). A total of 156 young adult femora (19 from the Early period, 31 Middle, 106 Late) were X-rayed using Agfa Gevaert Osray M-3 nonscreen film. Most of the adult bones were subjected to 200 mililamps for 2.5 seconds with 45 KVP at 36 inches. Slightly less time was used for the smaller bones. The film was machine-developed, and resulting clarity was good. Harris lines were identified on the basis of their transverse orientation and their shape, which reflects that of the epiphyseal plate.

Hypoplastic enamel defects on left permanent maxillary and left permanent mandibular canines from 394 individuals of the same populations were scored according to a code adapted from Sarnat and Schour (1941). Age at which the defect had occurred on the developing tooth was estimated on the basis of growth chronology illustrated by Massler, Schour, and Poncher (1941: Fig. 7). Recording this condition in terms of age categories was essential since it eliminated problems arising from the possibility of differential tooth wear. Each maxillary canine provided a maximum of six annual age category observations, and each mandibular canine provided seven.

Results

A total of 472 hypoplastic defects were observed in 619 teeth from 394 individuals. The same teeth provided a total of 2,922 observable age categories, so that the percentage of dental growth-years associated with hypoplasia is 16.2%.

The frequency of hypoplastic lines differs among the Early, Middle and Late period populations (Fig. 3). In the Early period 57 out of a total 406 observations revealed hypoplastic lines (14.0%). In the Middle period the relative number of lines drops significantly, 75 out of 679 possible (11.0%). In the Late period frequency increases, 340 out of 1837 (18.5%). The Late period can be divided into two temporal subpopulations (Phase 1 dating A.D. 500 - 1500 and Phase 2 dating A.D. 1500 - 1840). Some of the specimens deriving from Phase 2 are undoubtedly post-contact and therefore subject to the epidemics and disruptions that reached disastrous proportions in this area by the 1830's. Segregation of the two phases of the Late period does show that Phase 2 had a much higher frequency of lines (241 out of 1149 or 21.0%) as compared with Phase 1 (99 out of 688 or 14.4%, similar to the frequency in the Early period).

Since the populations might differ in attrition there is some possibility that these results are biased. However, if the Horizons

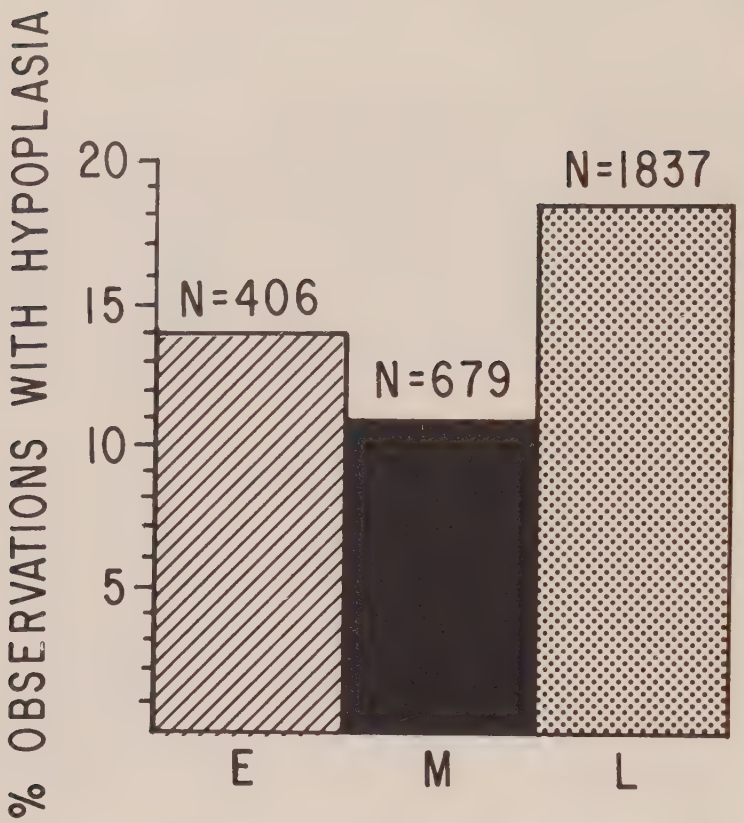

Fig. 3. The frequency of hypoplasia in the Early, Middle, and Late period populations.

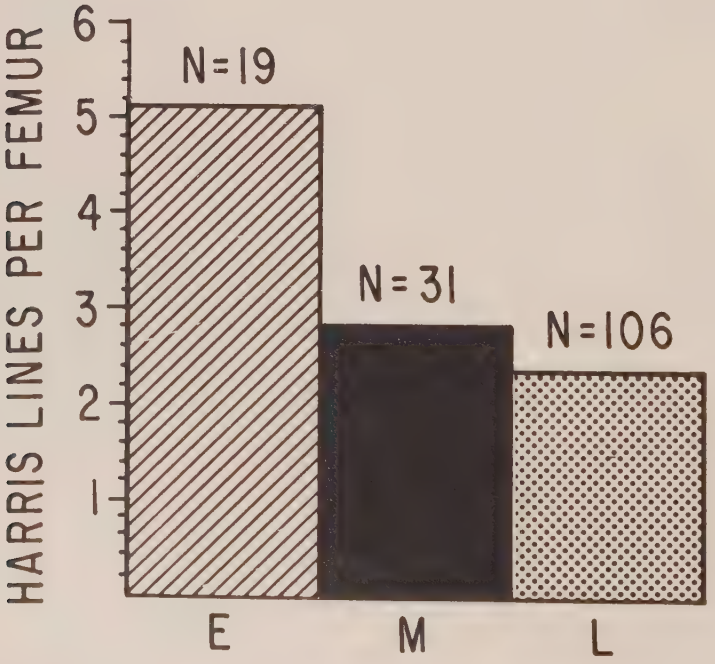

Fig. 4. The frequency of Harris lines in the Early, Middle, and Late period populations.

are compared in one age category the results are the same in direction. So taking age 4 (where the highest frequency of line occur) the Early Horizon has 30 lines out of 87 possible (34.5%), the Middle has 38 out of 135 possible (28.1%) and the Late has 142 out of 386 possible (36.8%). Again Phase 1 of the Late Horizon has a lower frequency than Phase 2 (32.1% and 39.4%, respectively).

The number of Harris lines also differs from one period to the next (Fig. 4). The Early period has the highest frequency (5.16 per femur), the Middle the next highest (2.84) and the Late the least (2.40). This confirms the previous study made on a completely different sample of bones, but deriving from the same populations (McHenry 1968).

Discussion

The confirmation of the trend toward a decline in Harris line frequency is noteworthy, since it correlates with our current understanding of other paleopathological and cultural trends. These can be summarized in a brief model of subsistence change in this area of California.

As mentioned above, archaeological evidence favors the importance of hunting in Early period subsistence patterns, with increasing importance of seed gathering and fishing in the Middle and Late periods. The most important single change is the adoption of the acorn as a major food resource (reflected archaeologically by the frequency of mortars and pestles) in the Middle period. This provided a food of high carbohydrate content, available in vast quantities, and--very significantly--storable for periods of more than a year. The cultural significance of the adoption of this singular resource has been repeatedly emphasized in the ethnographic literature. It appears to have paleopathological significance as well.

The supposition of heavy Early period reliance on game is compatible with reports of very low dental caries frequencies in these people (Newman 1957; Kennedy 1960; Barbender 1965). Such a subsistence base in this part of California would be quite secure throughout most of the year, but highly tenuous during the high water periods of the rainy season (late December - early March). That this season was in fact one of considerable hardship is confirmed by a study of burial seasonality which indicates 80% of Early period mortality occurred during the winter half of the year (Schulz 1970).

It is also compatible with the high Harris line frequencies found in this and the previous study.

With the adoption of the acorn complex in the Middle Horizon, subsistence adaptation appears to have become increasingly secure. The reported continued rise in dental caries rates (Newman 1957; Kennedy 1960; Grady 1969; Prero 1970) appears to reflect the increasing importance of acorn-born carbohydrates. While no data are available on seasonal mortality, the decline in Harris line frequencies is compatible with the year-round economic security reported ethnographically for these populations.

Although this model seems to us to portray most efficiently the situation as presently known, it is by no means verified. One problem is the discrepancy in hypoplastic enamel frequencies. We expected chronological trends in frequency to parallel those of Harris lines. They do not. However, since co-occurrence in individuals is not significant (McHenry and Schulz MS), it is possible that hypoplastic defects reflect largely different mechanisms of formation. Whereas hypoplastic defects result from childhood trauma only, the formation of Harris lines involves trauma followed by rapid recovery. The importance of the recovery factor in Harris line formation was demonstrated by the experiment of Park and Richter (1953) and described in detail by Park (1964). They starved experimental rats and found that only a thin transverse stratum formed at the epiphyseal plate. They termed this the primary stratum. It was formed by continued osteoblastic activity after the epiphyseal cartilage growth had stopped. The reason for this is that osteoblasts and chrondroblasts are under different regulatory mechanisms. When normal nutrition was restored, the cartilage cells took from four to nine days to recover before they were ready for osteoblastic invasion. The osteoblasts recovered immediately and laid down on the primary stratum a thick transverse secondary stratum. The formation of the secondary stratum was termed the recovery factor and was essential in the Harris lines. Park (1964) concluded that only in epiphyseal plate closure and in severe rickets was it possible to form a transverse line without the recovery factor.

In these California populations the recovery factor may have been very important. The high frequency of Harris lines in the people of the Early period is possibly correlated with their alleged failure to store acorns during the winter and early spring before the animal, and especially plant and fish, resources became plentiful. The early spring was the leanest time of the year for these Indians, but it is known that the Late period people stored acorns to carry them through these months (Baumhoff 1963).

The different pattern of hypoplastic lines among the three periods may reflect differences in nutritional or morbidity factors that are unassociated with the recovery factor. The rise in frequency during Phase 2 presumably parallels the increasing disease rate that reached its climax during the epidemics of the 1830's.

Conclusion

This study has confirmed a previously reported trend toward decreasing frequencies of Harris lines through time among prehistoric central California Indians. This trend appears to correlate well with other cultural and pathological trends among these people.

Although Harris lines and enamel hypoplasia show similar etiologies, and similar age-at-formation profiles, correlations on either an individual basis or in frequency trends through time are not significant. Actual co-occurrence in growing children cannot be ruled out, since Harris line frequencies derived from adult populations are subject to uncontrolled resorption problems. On the other hand, these lines should be more sensitive indicators of insult history than those in the enamel, and they do correlate with other cultural and pathological factors, while hypoplastic lines do not. Our results, in short, are enigmatic. They provide at once an indication of the possibilities of quantitative paleopathology in increasing our understanding of human adaptation, as well as an illustration of the problems which may be encountered.

Acknowledgements

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COWBOYS AND INDIANS: AN ETHNOHISTORICAL PORTRAIT OF INDIAN-WHITE RELATIONS ON RANCHES IN WESTERN NEVADA

by

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Introduction

The research which this paper[1] describes was first undertaken among the Brownsville[2] Northern Paiute in 1964 under the auspices of the University of Nevada's summer field school in ethnographic fieldwork, directed by Professor Warren d'Azevedo. During the course of many conversations with some of the older people of the colony the topic would inevitably turn to the kinds of work done by Indians and to their relationship with Whites. Men would tell me of their earlier days as buckeroos on ranches in the valley or elsewhere, and women would often refer to some White family in town whose clothes they used to wash or whose children they had cared for. In addition, there was usually some mention made of the help received from an employer, storekeeper, or rancher, or of the difficulties encountered by Indians in their dealings with these same kinds of people. I soon realized that these relationships with Whites, whatever their exact nature, had come to play a major role in the lives of these Northern Paiutes.

Subsequent visits to the colony over a ten-year period have strengthened this feeling I had about the importance of the work relationship in the lives of the Brownsville Paiute. Most of the men have worked for one or another of the big ranches in the valley, and during haying time the community suddenly becomes a quiet place for the few old men whose working days are over. At these times, I would sit under a tree and listen to the accounts of the jobs, travels, and adventures which had filled these men's lives when they were my age. If I asked about some earlier event which had taken place in the colony the response would generally entail some mention of who was working on which ranch or for which family in town when the incident in question occurred. When work slackened on the ranches the Indian community's pulse would quicken as voices, sounds of hammering and sawing, and the swirl of dust from the wheels of a car on the gravel road announced that some portion of the colony's work force was at home. And when something was planned for the community hall the borrowed tables and chairs would often be brought to the colony in the back of a pickup truck whose doors bore the familiar insignia of one of the valley's ranches.

It was 1968, when my wife and I spent about eight months living in the colony that I got a first-hand look at ranch work from the Indian's viewpoint. One august afternoon a man from a small ranch asked me if I wanted to work for him. I agreed, thinking it would be a good way to learn about ranching and to prepare myself to understand more fully what Indian people had been experiencing (or enduring,

depending on your point of view) since before the turn of the century. The work was hard, the pay low, and the boss everywhere. When he no longer needed me, we had cut, baled, and stacked his hay, dug a cesspool, and irrigated his alfalfa and pastures; only then he said I could go. That same week I went to work for a big ranch in the valley as part of the crew on the hay stack, working with some Indian men from the colony. By this time I was beginning to appreciate what the life of a hired ranch hand was all about, an experience which I could now share with my neighbors in the colony.

An additional source of information concerning Indians working on ranches came my way in 1968 when an Indian couple showed me a photo album which had been in the woman's family for years. I was struck by the number of snapshots taken on ranches, showing Indians and Whites working cattle, farming, and just enjoying themselves posing for the photographer. As I began to ask about particular people or scenes in the pictures, it seemed that there was an enormous amount of information contained in this album of photos--and in the memories of its owners. These pictures, together with what people had been telling me about their own work experiences and my own initiation into ranch work, gave me the basis for the work I have just begun and upon which I shall comment briefly.

The Research

The broad outlines of emigrant and settler incursions into the Great Basin and across western Nevada and the subsequent development of the agriculture and livestock industries are well enough known (Forbes 1967; Malouf 1966; Short 1965). But the ensuing relationship between individual Indians and Whites is seldom treated extensively in either historical or anthropological studies. It is a relationship which is both ambiguous and complex, and therefore difficult to document (Craig 1966:118-122). Yet the whole picture of the changes which have taken place in Indian communities such as the one at Brownsville can only be told by careful attention to the parts played by people from both groups and to the situations within which these interactions take place. A start has been made (Downs 1966:Ch. 8; Sanchez 1974; Scott 1966) to tell the full story of these encounters, yet there is much more to be done.

At the moment I am occupied by three related concerns which arose from the research. The first concerns the character of Indian-settler relations, which, at least along the Humboldt River, have been generally centered around the Indians' need for wage work and the Whites' complementary need for agricultural labor. The bulk

of materials I have so far surveyed (photographs, texts, interviews with Whites and Indians) points to this type of setting as a primary focus for the many types of negotiated exchanges between members of the two ethnic groups.

Secondly, it seems to me important to consider that the social relationships formed in cooperative work such as we find on local ranches often create common purposes and common interests among the participants. Working together on a common task demands a certain amount of accommodation and mutual understanding from both parties, whatever their origin, background, and beliefs about each other (Lyman & Douglass 1973:345). It follows that each party to the work relationship would learn a good deal about the other. Whether or not this knowledge was consciously applied in the interaction to, for example, better the conditions of one individual at the expense of the other (Thompson 1973) or to simply increase the effectiveness of the task group is an open question (Bennis, et al, 1973 Part IV).

Finally, although it is fashionable these days for scholars and laymen alike to believe that Indians and Whites never really tried to understand each other because of a mutual, blind hatred which kept them perpetually at war, my impression is that this picture has been greatly overdrawn (Hollon 1974:205ff). I think it is a mistake to conclude that Bury My Heart at Wounded Knee (Brown 1970) is a balanced portrayal of Indian-White relations throughout the country, any more than the old "Amos and Andy" radio program shows all of the aspects of American Negro life prior to World War II. As with other sensational aspects of our nation's frontier history, I suspect we have perpetuated a distorted picture of widespread violence among Indians and Whites (Rusco 1974). As the media knows, violence makes good copy (Cf. Ewers 1971; Prucha 1971). Perhaps, as H.L. Mencken quipped, "something which everyone accepts as the gospel truth is inevitably false." At any rate it is time for a look at the other side of Indian-settler relations in the western Great Basin. I suspect that if the Great Basin had seen as much, or nearly as much, violence as is attributed to the Great Plains, Shoshoni, Ute, and Washo would be as well known to the American public as Comanche, Sioux, Cheyenne and Apache.

One way I have found to begin the task of sorting the truth from the myth concerning Indian-White relations is to collect old photographs which depict Indians and White together in a wide variety of contexts (Collier 1967; Blackman 1973). The photo album mentioned earlier provided the start, and armed with a set of about forty 5" X 7" glossy black-and-white photographs I began to show them around the Indian community, all the while asking people's opinions about

virtually anything in the pictures. From these interviews came a virtual flood of recollections about individuals and events fondly remembered from the past and discussions about the activities portrayed. At the same time I asked to copy additional pictures from albums in the colony and from collections owned by Whites in the valley. My primary focus continued to be scenes of Indians and Whites engaged in ranch work, but I could not resist copying fine old pictures of places and things which bore some connection to the Indian people at Brownsville. I extended my inquiries concerning the work relations of Indians and Whites to the Whites in town and on the neighboring ranches, and collected additional prints from a public library and the Nevada State Museum. A final source of photographs was the willingness of a rancher to take me around the valley and point out to me the old pieces of horse-drawn farming equipment now rusting and rotting in a pasture or beside an irrigation ditch. I photographed these and added them to my collection, now swollen to more than 100 prints and another 200 or so negatives ready to print. Each photograph was given a number which corresponded to a page in my notebook where comments about the picture could be written down.

Findings and Discussion

The original set of photos obtained from the colony in 1968 and used in interviews this summer turned out to be mostly confined to the upper Humboldt River. Consequently there was a heavy emphasis on working cattle on the range rather than doing the kinds of farm work represented by the irrigated areas along the lower Humboldt, where I was working. People were kind enough to point this out and suggest other differences in the jobs which could affect the situations in which Indian men worked with Whites. For example, a higher proportion of Indian families lived on the ranches in the northern Great Basin, while the area around Brownsville saw an Indian settlement from which men would commute daily to the ranches. Further work uncovered the differences in available water, type of forage, and basic terrain in the two regions, variations which I am now beginning to see in the photographs collected this summer. As might be anticipated, the type of clothing preferred by Indians differs somewhat in the two areas, and is possibly related to the type of work engaged in. It is certain that clothing styles among both groups changed over the last century; the exact relationship of Indian styles of dress to that worn by Whites remains to be worked out from the photographs.

Another aspect of the work situation which came out in the interviews was the stereotypes held by each party about the other.

Indian men were praised or damned on the basis of how well they performed the jobs on the ranch, and judging by the stories told of two Indian men we have the beginnings of a minor legend. Feats of strength, ability to do a wide variety of jobs well, and the command of a body of knowledge and skills were all cited by Whites when these men's names were mentioned or their pictures shown. Contrary to my expectations I was not inundated with a recitation of some of the standard negative criticisms applied to Indians, for example, that "they are good workers, but undependable, especially if they get something to drink." Many Whites, when referring to Indians as a group would use some of the classic stereotupes, but as soon as I would show them a picture of a particular Indian person they would concentrate on evaluating that individual's abilities. In fact, there were some instances in which Indian men figured prominently in the lives of Whites who were being interviewed, and indication that the kinds of relationships between the two groups may have run the gamut from avoidance and hostility to friendship. By and large the Indians did not treat individual Whites as "heroes" on the basis of their skills as cowboys or farm hands. About the only kind of praise given individual Whites by Indians involved their possessing qualities called by such names as "kind," "fair," "he likes Indians," and "successful"--the latter term being applied to such men as John G. Taylor, head of a ranching empire in northern Nevada years ago.

The pictures show us how much of what Indians wear and use was adopted from their employers, fellow workers, and often, their enemies. Indian men I know and have interviewed have exhibited a detailed and extensive knowledge of the technology of ranching, from the use and care of horses to the types of crops raised on ranches in the valley. Yet what else have Indians adopted from this situation of mutual labor which is not material or technological, but perhaps can best be included under the terms "values" and "beliefs"? There is plenty of evidence from the study of small groups engaged in common tasks (Bennis, et al, 1973; Strauss 1959) to lead us to expect some effects on the outlook of both parties engaged in such a work relationship. Yet the evidence for this is very sketchy at best. Have Indian men adopted some of the attitudes toward work espoused by Whites under the rubric of the "Protestant Ethic"? Perhaps this has been the case. In addition, are there other ideas or values which have "rubbed off" on Indians as a result of their relationships with Whites? If so, how do we secure the evidence for such borrowings? Can old photographs and contemporary interviews provide us with some answers? A related question, in fact a corollary of the previous point, is to what extent have Whites changed their attitudes, beliefs, or values as a result of close association with Indian people?

The same questions about the nature of the evidence to support or refute such a proposition apply here as they did with the question of change among Indians.

I have already been disappointed by the loss of many of the people whose memories could have helped us to answer such questions, important questions which concern a heritage which Indian people are at this moment trying very hard to preserve and to understand. Perhaps in some small way this research may inch us toward that common goal.

NOTES

1. This paper is a revised version of the one presented at the Great Basin Anthropological Conference in Carson City, Nevada, September 13-15, 1974.

2. I have changed the name of the community to preserve the privacy of the Indian people whose willing support I gratefully acknowledge.

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PINE NUTS, CATTLE, AND THE ELY CHAIN
RIP-OFF RESOURCE REPLACEMENT VS. HOMEOSTATIC EQUILIBRIUM

by

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Land use and resource management are becoming increasingly important in North America. In the Great Basin, one of the most significant challenges to Euroamerican assumptions about land is taking shape. This challenge is intimately connected with Euroamerican industrial economy, which has considerably raised the level of energy production in the Great Basin. It derives, however, from the aboriginal energy exchange system of the Western Shoshone. It is instructive to compare the energy exchange system that operated aboriginally in the Great Basin to that which operates now, and to derive an explanation of the conflict over land from this comparison.[1]

Thomas (1971; 1973) has developed a cybernetic homeostatic model of aboriginal Western Shoshone subsistence which accounts for Shoshone cultural behavior in terms of environmental limitations (Meggers 1954) and the necessity to respond to those limitations and to perturbations in the environment. The model is represented as a flow chart showing the cyclic nature of the Shoshone subsistence system, with decision nodes reflecting possible choices of resource use at various times of the year and population movements corresponding to season and choice of resource. The most important resources in this system are the pinyon pine, Indian ricegrass and antelope. If we could plug energy into that flow chart we could modify it to yield a neat diagram of energy exchange. The flow chart would be quite an accurate model since the aboriginal system was a closed system. There was relatively little trade, population was stable, and there was an ecological and energetic balance between human populations and their ecotones.

This model is verified by empirical data drawn from Thomas' archaeological work and from Steward's (1938; 1941) ethnographic data. The balanced and cyclic nature of resource use seems to have permeated aboriginal Shoshone life so thoroughly that most of Shoshone culture is derived from this seasonally cyclic relationship to land and resources. Aboriginal Shoshones had to have knowledge of the system that produced certain foods at certain times. Their use of foods was dependent on a cyclic rotation of seasons that, so to speak, brought a different collage of foods into focus at each turn. This cyclic rotation of food sources brought with it a cyclic rotation of people from one ecotone to another. Although Shoshones would probably not draw flow charts to illustrate their subsistence patterns, they certainly operated within the mutual dependences of climate and ecotone.

The aboriginal Western Shoshone subsistence system experienced perturbations that increased in magnitude between about 1829

and 1862. Mary Rusco (1974:13) feels that "the temporary change in the environment caused by a large party of well armed and mounted hunters and trappers must...have temporarily decreased the Indians' food supply and may even have rendered some marginal areas temporarily uninhabitable." By 1862 an Indian agent reported that "the wild game is being killed by the whites. The trees from which the Indians gathered nuts (pine nuts) are being cut down, and the grass from which they gathered seeds for the winter is being taken from them...." (Clemmer 1974).

By 1862, then, changes caused by non-Indian intrusion probably had exhausted Shoshones' adaptive responses within their own cultural system. In the following 112 years, increasing numbers of Shoshones have adapted to the perturbations by adopting non-Indian behavior patterns. This acculturative trend includes learning farming; adopting values and behaviors associated with wage labor; changing residence patterns from seasonal transhumance to sedentary residence on outskirts of mining camps, railroad towns and ranches. Although a few hundred Indians were persuaded to settle on a reservation, most remained where they were until reservations were created around their settlements in the 1930's and '40's (see Clemmer 1972:281-304).

Today, all Shoshones have adopted Euroamerican adaptive responses to the Great Basin environment. Ranching, mining and tourism have stabilized as adaptive responses, with ranching being the only industry concerned with managing land resources. Just as the pinyon pine, ricegrass and antelope were the most important food resources within the aboriginal Western Shoshone energy exchange system, beef cattle can be regarded as the most important food resource in the Euroamerican energy exchange system operating today within the limitations of Nevada ecotones.

An important component of the ranching industry is the Bureau of Land Management (BLM). The BLM was established in 1934 by the Taylor Grazing Act, and since that date has assumed increasingly more control over the "public domain". With a permit, fee and grazing allotment system, the BLM regulates harvesting of timber and pine nuts and the grazing of sheep and cattle. It also manages lands to encourage maximum use of resources by wildlife and livestock.

One technique the BLM uses in its management strategy is what I referred to as rip-off resource replacement. In this strategy, indigenous plant species are literally ripped off the land. Sage, pinyon, and juniper are removed by either chaining,

plowing, or spraying, and replaced with Siberian wheatgrass, crested wheatgrass, intermediate wheatgrass, yellow sweet clover, bitterbrush, alfalfa, Russian wild rye, small burnet, bluebunch wheatgrass or other grasses or forbs suitable for either wildlife or livestock.

The purpose of the chaining, plowing, and spraying projects is "to decrease less desirable plants and increase desirable species" (Cain 1971:1). Often pinyon-juniper chainings are done where the trees have encroached onto lower hills or rangeland and at the request of a rancher who has a grazing allotment in the area, and with some financial contribution from the allottee. Chaining pinyon-juniper could ostensibly increase the grazing capacity of such an allotment as much as tenfold (BLM 1971a).

To accomplish the goal, a 90-pound-per-link anchor chain 150 feet long, called the "Ely Chain", is hitched to two crawler caterpillars and dragged across the pygmy forest of pinyon-juniper or a field of big sage. The chain tears up the vegetation by its roots, the area is then seeded, and the chain is then dragged across the area again in the opposite direction to complete the uprooting job and cover the seed. To date, the BLM has chained about 45,000 acres of pinyon-juniper in Nevada (Keil, Brown 1970).

Some sage-dominant areas are plowed rather than chained, and others are sprayed with the herbicide 2-4-D, a defoliant that has been effective in Viet Nam but is not as effective on sage as mechanical removal. All areas are seeded after being cleared, sometimes by air and sometimes with ground equipment.

From preliminary analysis of data obtained in 1971 and 1974, I would hypothesize that more energy, measured in money and manpower, is put into resource replacement than is derived from utilizing the resource for producing beef cattle or sport wildlife. For instance, in many chained areas where the BLM has done a poor job of seeding, only weeds and a few struggling young trees grow amid the rubble of felled limbs and trunks. Although chainings are financed with funds earmarked for improving wildlife habitat, in some areas only 10% to 20% of the seed sown was suitable for deer or antelope; the rest was suitable primarily for cattle or sheep. In other areas, no increase has been noted in the number of deer using the new browse area after chaining. And since pinyon-juniper is a climax type of growth, eliminating it in the "encroachment areas" only strengthens its ability to return with new vigor, since a particular biome always tends toward climax growth. In areas where the forest is several hundred years old, however, chaining usually

does eliminate most pinyon-juniper for good (see Blackburn 1967; Tausch, Pudney and Tueller 1971).

If the above hypothesis is borne out by further research and analysis, the BLM's resource replacement activity may be a major part of a maladaptive response to Great Basin environment. Fraser (1956) maintains that the inevitable results of pastoralism in a marginal environment such as the Great Basin are a decrease in desirable plants, dessication, erosion and ultimate destruction of the productive utility of the area. Lane's (personal communication) historical research indicates that livestock operations in Nevada between 1880 and 1920 came dangerously close to effecting such results through overgrazing.

Analyzing the BLM's resource replacement policies as an adaptive strategy within an energy exchange system raises questions. First, if more energy is being put into refurbishing land than is being extracted from that land in terms of livestock utilization, what could be preventing the BLM from considering this possibility and acting on it? Second, if grazing in the Great Basin is actually causing slow deterioration of the land, how successful can the beef cattle industry be in comparison to the aboriginal Western Shoshone system based on the pinyon pine and other native resources? Third, do Great Basin environmental limitations and perturbations function to maintain the BLM's resource replacement policies in the same way that these limitations and perturbations functioned to maintain Western Shoshone subsistence behavior patterns?

Answering these questions involves applying a cybernetic, homeostatic model such as (Thomas 1971; 1973) model to the BLM. A homeostatic model assumes that all living species adjust their living patterns so that they are capable of harnessing as much energy as possible from the environment. Wiener (1950:28) first applied the homeostatic model to the field of human society. Slobodkin (1968) has applied a homeostatic model to animal evolution, interpreting organisms as maximizers of homeostatic ability. The essential component of a homeostatic model is equilibrium. As a vehicle for performing adaptive responses, an animal population functions as a feedback mechanism allowing individuals to utilize organization and communication principles to adjust future conduct by past performance (Wiener 1950:33); and bring the population back into equilibrium if it is thrown off by perturbations.

Flannery (1968), Vayda (1970; 1971; 1974) and others have applied the homeostatic model to specific societies to explain behavior. Flannery (1972) has applied the model to the socio-cultural evolution

of societies in general. In these models, behavior is regarded primarily as response to environmental factors, and changes in behavior patterns are interpreted as responses to perturbations in the environment.

Homeostatically, the BLM's activities are not responses to perturbations in the physical environment of the Great Basin; they are responses to perturbations in the socio-economic environment of the United States. Economic conditions, decisions, and regulations far removed from the Great Basin are responsible for the BLM's attempts to increase the productivity of the range. This kind of response can be contrasted to the aboriginal Western Shoshone response, which clearly had to deal with Great Basin environmental vagaries: failure of a pine nut crop, elusive antelope herds, bad crops of Indian ricegrass or nep roots (Thomas 1971; 1973).

The energy system in which the BLM operates is not such a closed system. It cannot be represented diagramatically by a simple flow chart. It might be represented more accurately by an inverted pyramid. At the pinnacle of the inverted pyramid, which is at the bottom, is food production of all sorts, including the beef industry. Above it is Euroamerican society in toto. In its environmental impact statements, the BLM's assessments of pinyon-juniper chainings consider only the pinyon-juniper ecotones and the relationships of those ecotones to the economic aspects of the inverted pyramid which rests in part on the products which these ecotones produce (BLM 1971b; 1972). There is no hint of any conception of a cyclic energy flow within Nevada ecotones. Rather, the ecotones are considered as part of the vertical system of monetary exchange. There are so many inputs and so many energy transfers in this pyramidal system that can affect land use policies reflected in BLM strategies that a direct comparison with the aboriginal system using an identical homeostatic, flow chart model is not satisfactory.

Another factor in analyzing BLM activities is the role of the Western Shoshone in the contemporary Great Basin economy. Most Shoshones have wage jobs or raise cattle. Therefore, Shoshones could be expected to generally support the BLM in its attempts to increase livestock carrying capacity. However, a sizable number of Shoshones are adamantly opposed to the BLM. They are generally represented by hereditary Chief Frank Temoke and are identified by themselves and by others as "Traditionals" or "die-hard Indians".

The BLM is a target of Traditionals' criticism for three basic reasons: first, it claims exclusive right to determine use and disposal of the area that Traditionals consider to be Western Shoshone territory; second, pinyon-juniper chainings destroy trees that are a

customary food source for Nevada Indians; third, the BLM is trying to serve the interests of a non-Indian system of resource utilization rather than the interests of indigenous wildlife and native peoples and is trying to introduce foreign biomes just as Euroamericans have introduced a foreign life style (Clemmer 1973).

Early in 1974 a group of Traditionals formed the "United Western Shoshone Legal Defense and Education Association" to strengthen and perpetuate Shoshone culture and to regain control of the National Forest and "public domain" lands administered by the Forest Service and the BLM. This group has hired lawyers and petitioned the Indian Claims Commission to file an amendment to the Western Shoshone claim originally filed in 1951 by the firm of Wilkinson, Cragun and Barker for the Western Shoshone Identifiable Group.

The new claim would modify the case presented by claims attorneys Wilkinson and Barker by withdrawing the "public domain" and "National Forest" portions from the tract for which Western Shoshones would be paid $26.1 million ($1.05 per acre). The new claim differs from the claim submitted by the Wilkinson firm in asserting that these portions of land were never taken, are held illegally by the U.S. Government, and thus should not be compensated on the same basis as lands that actually were taken (Forbes 1965).

The entire issue revolves around the term "taking". According to attorney Wilkinson, the term is synonymous with "gradual encroachment"--i.e., the establishment of towns, railroads, mines, ranches and settlements by non-Indians. Wilkinson maintains that all of the Western Shoshone land was "taken" in this manner.

It has been pointed out elsewhere (Clemmer, Martone, Holley 1974) that there are two flaws in Wilkinson's reasoning. First, less than 30% of either the larger aboriginal tract or the smaller tract described as Western Shoshone country in the 1863 Treaty of Ruby Valley has been "gradually encroached" upon. Second, the "date of taking" can be questioned on grounds of historical fact (see Clemmer 1974). It has been decided that Indian title was extinguished by gradual encroachment in the year 1872. But how can an exact date be determined for the ongoing process of gradual encroachment? Because of these contradictions, and the unfathomable assertion by Wilkinson that all Shoshone land was taken by a process that could not possibly have taken it all, the attorneys for the United Western Shoshone are charging the Wilkinson firm with collusion. They are requesting a hearing before the Claims Commission on the grounds that the agreement made between Wilkinson and the government

attorneys that all the land was taken in 1872 does not square with actual fact and does not represent the best interests of the Western Shoshone.

Additionally, two Shoshone women are defendents in a civil action brought by the Bureau of Land Management. Their family has been living in the same area of northeastern Nevada for as long as they can remember. In the 1930's they homesteaded a 160-acre tract, but the family has continued to graze their livestock on the "public domain" just as they have always used tribal lands: without paying fees or getting permits from the BLM. Their defiance of BLM regulations resulted first in a fine, which they refused to pay, then a lawsuit from the Federal Government.

The U.S. attorney for the Federal District Court in Reno acknowledges that the 1863 Treaty of Ruby Valley is still "in full force and effect," but asserts that the United States obtained ownership of Western Shoshone land through the Treaty of Guadalupe-Hidalgo. In this treaty, Mexico in 1848 ceded to the United States jurisdiction over 338 million acres of land including Nevada. But the Treaty did not extinguish Indian title. In fact, in 1860 a Department of Interior official argued that the Treaty actually guaranteed Indian title to their aboriginal lands (Clemmer 1974). Obviously this position collides head-on with the agreement before the Indian Claims Commission between the Government and Wilkinson that Indian title was extinguished in 1872 by "gradual encroachment". However, the attorneys who filed the original claim argued for monetary compensation rather than for the land itself, and in June of 1974 advised the Western Shoshone, "we're telling you right now that on the basis of our experience, what the Indian Claims Commission has ruled in other cases, we don't think there's any possibility" (that the Western Shoshone might recover their lands) (Clemmer, Martone, Holley 1974:7).

It will obviously take a great deal of mental, monetary, and physical energy to pursue this legal path in the light of opposition not only from the U.S. government but also from the attorneys who filed the original claim. At this point, then, a question can be posed. Why, if Shoshones are incorporated into Euroamerican economic patterns, has a sizable group of Shoshones decided to put time, energy and money into action that, apparently, has no adaptive advantage in terms of Great Basin subsistence strategies now being pursued, and indeed conflicts with current attempts to manage Great Basin resources? Vayda (1970:583) incorporates such behavior into his homeostatic model as "cultural lag". That is, change in certain practices that had been adaptive but lagged behind other changes which were making the practices maladaptive. However, the Shoshone

attempt to regain their land and eliminate the BLM from the Great Basin can hardly be brushed off as a "maladaptive response" due to "cultural lag". The Shoshone attempt is being made through institutions of the society which introduced the most profound perturbations into Western Shoshone environment, and is being pursued through a very sophisticated legal argument.

A second question arises concerning the BLM's resource removal activities. If indeed more energy, represented as money, is being put into such projects as pinyon-juniper chaining than is being returned, why does the BLM continue this energy drain? Is BLM activity aimed at restoring an equilibrium in energy exchange in the Great Basin, just as the aboriginal Western Shoshone system was, or is it motivated by other considerations?

It might be said that the BLM thinks in terms of a greenback escalator, where as much land as possible should be placed on the escalator where it will be carried to the acme of commercial productivity. Aboriginal Western Shoshones, in contrast, thought in terms of cyclic flow charts, where an ecotone passed from the kaleidoscope of human energy endeavors according to its relationship to other ecotones and the passage of seasons. These two different kinds of energy systems represented in subsistence hunting and gathering and in Euroamerican market economy, and the two ideologies are so fundamentally different that a homeostatic model cannot account for either the behavior associated with the BLM's ideology or that associated with Traditional Western Shoshone.

A key factor in the BLM's adherence to an ideology disconnected from Nevada ecotones is alienation. Blauner (1964:15) asserts that "alienation exists when workers are unable to control their immediate work processes, to develop a sense of purpose and function which connects their jobs to the over-all organization of production, to belong to integrated industrial communities, and when they fail to become involved in the activity of work as a mode of personal self-expression". He contrasts alienation with the fact that "in pre-industrial societies 'uninteresting' work was highly integrated with other aspects of the society, with ritual, religion, family, and community or tribal relationships, for example" (Blauner 1964:26). The difference between an integrated group such as the Western Shoshone and a work force permeated with alienation, such as the Bureau of Land Management, and perhaps the Interior Department in general, is similar to the difference between a true nation with a common cognitive mazeway (Wallace 1956) and what Kurt Vonnegut, Jr. (1974:xv) calls a "granfalloon: a proud and meaningless association of people".

Although not all Western Shoshones knew each other, they were all related through their common knowledge of subsistence techniques, through common knowledge of the cyclic nature of energy flows in certain ecotones, and through extensive kin networks. Everyone knew about the pine nut, where to get it, how to process it, how to eat it. Knowledge was tight, controlled, and crucial for survival. Irrelevant information was discarded, and resources such as the pine nut and the pinyon tree that produced it were cultural items of extreme importance. People knew their relationship to such resources and knew their position within the context in which those resources were produced.

Although Western Shoshones are now incorporated into Euro-american economic pursuits, most still participate in traditional food-gathering behavior to some extent, primarily to enforce their cultural and psychological ties to the land which formerly provided the sole support for human life in the Great Basin. Omer Stewart (1973:11) notes that "the fact that Western Shoshones have remained scattered widely within that traditional Western Shoshone country is evidence that we are dealing with a special, deep-seated cultural pattern which places high value on living within an aboriginal territory." Even today, many Western Shoshones have knowledge of the cyclic energy system of the Great Basin, even though they no longer operate primarily within it. People can, for instance, tell when the pine nuts should be ripe according to the stage of plants miles away.

Thus, many Shoshones still operate to some extent within the seasonally cyclic system of aboriginal times because of cultural identity. Pine nuts are no longer a vital source of energy, but they are a vital part of Shoshone cultural identity. Many people preserve knowledge of the land and its seasonal produce because they are Shoshones, and it is behavior accompanying such knowledge that culturally identifies a Shoshone. To Shoshones who still use the land, especially those who preserve knowledge of the aboriginal cyclic energy flow, and hunt and gather according to that flow, the land is not a market commodity. It is a source of energy, and it is the cognitive mazeway deriving from the former operation of the Western Shoshone energy exchange system that is important for understanding certain aspects of Western Shoshone behavior.

A simple comparison of energy exchange systems using a homeostatic model obviously cannot account for many aspects of the relationship of human beings to land in the Great Basin today. The cybernetic homeostatic model works well to explain aboriginal Western Shoshone subsistence. But it cannot explain the role which

that subsistence system plays in Great Basin cultural relationships today. Energy exchange is no longer a simple matter of response to environmental perturbations. Ideologies deriving from two totally different systems of production and exchange, and the consequent degrees of alienation and integration associated with each, are crucial variables that energy flow charts do not present. Only by going beyond the limitation of flow charts can explanations be offered for two sets of energy draining behaviors: the BLM's investment in questionable land management practices, and some Western Shoshones' legal action insisting that, in the words of one Western Shoshone, "a lot of us don't sell our rights the way it's stacked up in Congress and in the Court of Claims."

NOTES

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THE WESTERN SHOSHONE OF NEVADA AND THE U. S. GOVERNMENT, 1863-1950

by

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Preface

A short history of the Western Shoshone Claim will place in perspective my report.

It might be well to recall that in 1863 five treaties between the Shoshone Indians and the United States were negotiated by James D. Doty representing the U.S. and various Shoshone located in different sections of Shoshone country. The legal status of the several subdivisions of the Shoshone was recognized over the years by Congress by means of laws and jurisdictional acts which authorized them to sue the U.S. in the Court of Claims.

The Western Shoshone of Nevada were so named by President Hayes when he established Duck Valley Reservation in 1877, and Carlin Farms Reservation in 1879. Jurisdictional Acts had been passed by Congress for the Wind River Shoshone, March 3, 1927 (44 Stat. 1349); and for the Northwestern Bands, February 29, 1929 (45 Stats. 1407).

The claim to be discussed was filed under authority of the Indian Claims Commission Act of August 13, 1946 (60 Stat. 1049). The Shoshone petition, Docket 326, was filed August 10, 1951, to which the U.S. Department of Justice filed its denial of all charges on September 5, 1952. In January 1952 I had been asked to do research and prepare to testify as an expert witness for the Shoshone Nation by their Washington firm of attorneys Wilkinson, Cragun and Barker. With the assistance of a number of graduate students and with the aid of a portable microfilm machine, documents regarding the Shoshone were examined and copied in the historical societies and universities of Utah, Nevada, Idaho and Wyoming as well as in the Documents Divisions and stacks of the University of Colorado Library where I found space for a research organization. I selected and duplicated nearly a thousand documents, copies of which were sent to the attorneys in Washington for final decision whether they should be filed with Department of Justice, a month before the Hearing and with the Indian Claims Commission on the opening day of the Hearing. After duplicates had been eliminated 420 Petitioner's Exhibits, including about a hundred maps, were filed. The hearing before the Indian Claims Commission took place in Denver, Colorado, for four days ending August 30, 1957.

It took three and a half years for the attorneys for the Indians to prepare their Proposed Findings of Face and Brief, filed February 16, 1961 to which the government attorney objected and proposed his

own Proposed Findings of Fact and Brief on July 28, 1961. In September 1961, the Wilkinson firm filed its Objections to the governments findings and proposed new Findings of Fact and Brief for the Petitioning Shoshone.

It took just over a year for the Indian Claims Commission to consider the exhibit, testimony and the written arguments by the two sides and in turn file its Finding of Fact and Opinion and Interlocutory Order which was done on October 16, 1962. The Commission ruled that the U.S. Government owed the Shoshone Indians for their lands, and that four separate groups would be recognized as the old land owning units. These were (1) the Shoshone Tribe of Wind River and Fort Hall Reservation; (2) The Lemhi Tribe; (3) The Goshute Tribe and (4) the Western Shoshone of Nevada and of the Death Valley area of California.

Henceforth this short review will be concerned only with the Western Shoshone, Docket 326-K. Following the evaluation Hearings concerning the Western Shoshone lands, the Indian Claims Commission on October 11, 1972, ruled the U.S. Government should pay the Western Shoshone $21,550,000 for 24,396,403 acres of land, plus $4,604,600 for profits lost from mining in Western Shoshone territory prior to July 1, 1872. This total of $26,154,600 due the Western Shoshone would be subject to deductions of offsets of amounts of gratuities given the Western Shoshone by the U.S. Government.

The report presented here is concerned with the amount of offsets claimed by the government. Hearings on offsets, in fact, began with the filing of a report of the General Accounting Office on September 18, 1968, exceptions and responses followed until April 29, 1970, when the Commission ruled (23 Ind. Cl. Comm. 70) that the Western Shoshone had not received $118,745.91 charged against them, which in fact, had been used to pay B.I.A. administrative costs. Also the Commission noted that even the $100,000 promised the Western Shoshone in the Doty Treaty of 1863 may not have reached the Indians. At least $16,392.76 was known not to have reached them.

The report presented below was a "hurry-up" job completed in three weeks in September 1973 with the help of a half dozen graduate students. I presented oral testimony in Washington, D.C. on October 9, 1973. During that Hearing the Government claimed offsets in the amount of $554,332.02 as gratuities. My report was one of several exhibits presented to counteract the claim for offsets so that the Western Shoshone would be paid soon $26,057,836.82,

as laid out in the Plaintiff's Proposed Findings of Fact and Brief, Docket 326-K, filed with the Indians Claims Commission January 26, 1974. There is a separate case (Docket 326a) dealing with the $100,000 promised in the Ruby Valley Treaty of which $96,763.18 was appropriated by Congress, which amount is a temporary off-set against the $26,154,600 originally to be paid Western Shoshone in 1972.

Report

Introduction

The ancient Toughness, intelligence, and adaptability demonstrated by the Western Shoshone of Nevada by their living from time immemorial in an environment which in many areas was harsh and afforded little of practical value for a hunting and gathering people has persisted to the present and was documented by Dr. Julian H. Stewart (OCS-67)[1] and Dr. Percy Train, et al., in the 1930's (OCS-52). Notwithstanding some documentation of both the ancient and modern life of the Western Shoshone, the official and scientific literature dealing explicitly with the Western Shoshone is sparse. Much can be learned about them, however, by placing them in the cultural setting of the State of Nevada, or the cultural area of the Great Basin, since most of the cultural features of the dryer rural sections of the Great Basin are known to have existed in much of the ancient Western Shoshone country, just as the historic and modern social, economic and political patterns of behavior of rural Nevada and the rest of the Great Basin were and are in force in Western Shoshone territory. These pervasive western cultural patterns of the mining and cattle ranching areas of western United States operated in Western Shoshone country and the Indians were progressively forced to adjust to that pattern as white settlement deprived the Shoshone of any possibility of continuing to live according to their own ancient life style.

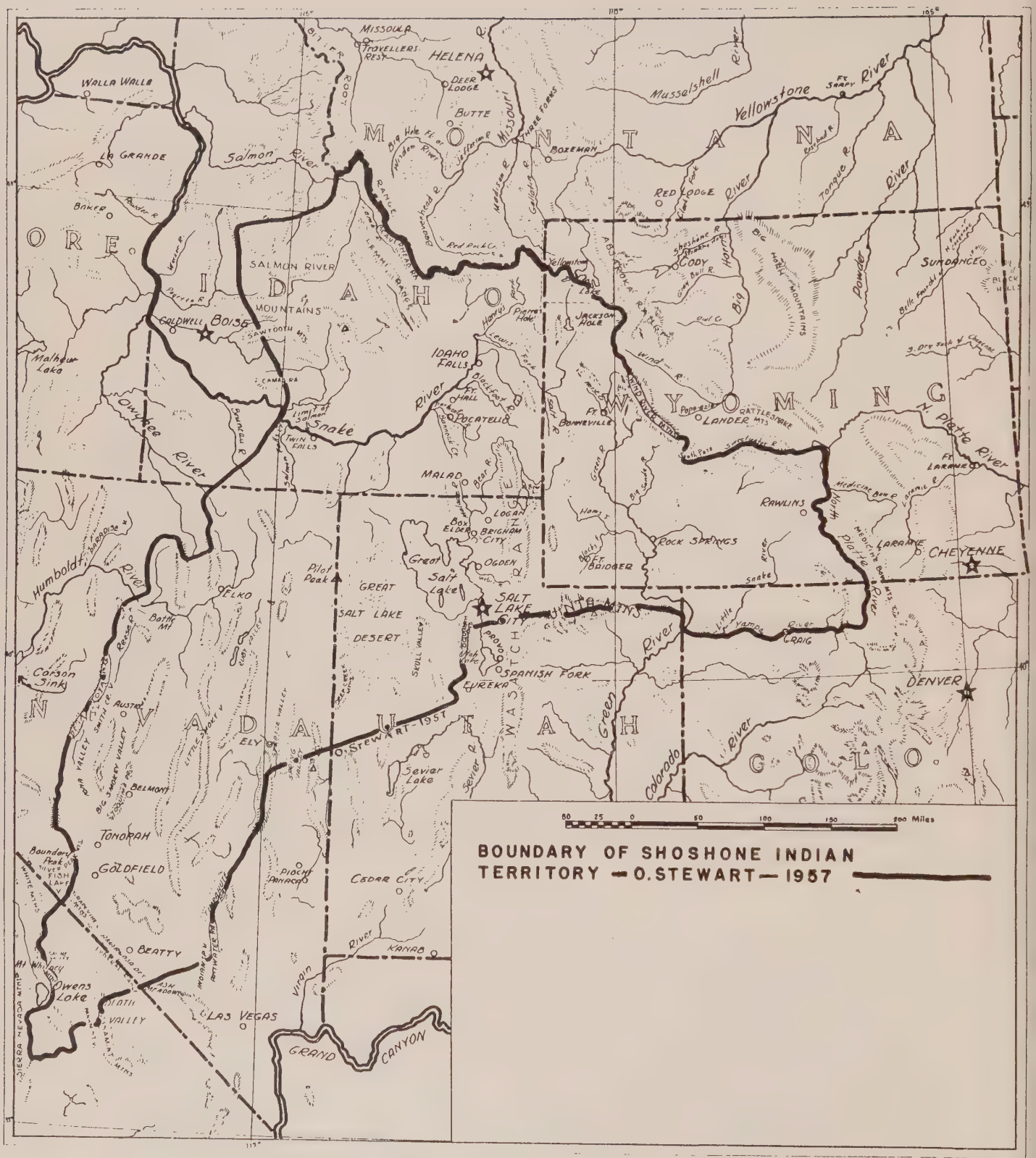
Although the physical and material conditions of Western Shoshone life were nearly completedly and permanently changed by occupation of their territory as ranches and mines reached to the limits of their territory and particularly the better valleys, some ancient Shoshone emotional, social and psychological values and behavior patterns appear to have persisted in spite of material cultural changes. Some of these attitudes have been and are of primary importance in passing judgment on almost any facet of Western Shoshone life. One such value which appears excessively strong among the Western Shoshone Indians, and which has usually been overlooked

or ignored by nearly all of the peripetetic, migrating whites they have had to deal with, is the strong attachment they have to their home territory very narrowly defined. In 1863, when the Western Shoshone Treaty of Peace was signed, the chief U.S. Treaty Commissioners, Utah Territorial Governor Doty and Nevada Territorial Governor Nye (OCS-46, pp. 14853-54), appear to have sensed this strong Western Shoshone attachment to their home territory, because they explicitly stipulated that a reservation for the Western Shoshone would be established in Western Shoshone territory as the region became occupied by whites. It is not that treaty provision alone that I, as an anthropologist, wish to emphasize. That treaty condition seems to hint at a cultural fact of Western Shoshone life which has persisted from 1863 to 1973. Strong and often repeated attempts to wean Western Shoshone away from their emotional attachment to their own natal valleys have failed.

For most citizens of the United States, it is difficult to comprehend why Western Shoshone Indian families will remain in some of their poorer ancestral locations, barely surviving on a near-starvation diet, with inadequate housing and clothing, on arid plots of land difficult to reach because they are many miles away from improved roads.

The best efforts of federal, state and county authorities have failed to tempt the Western Shoshone to abandon their ancestral areas. Western Shoshone are in 1973 as they were in 1863 dispersed in nearly all sections of the four large Nevada counties, Elko, White Pine, Eureka, and Lander, enclosed in the boundaries of Western Shoshone territory described in the so-called Doty Treaty, and in Nye County. As the better land was acquired by whites for mining and ranching, the Shoshone remained and adjusted as best they could. Nearly all became part-time ranch hands and domestics and lived as squatters in poor shacks on the public domain or upon private land.

Official records of all their scattered homes are not available. The presence of Western Shoshone in the five counties of the Western Shoshone homeland is documented in U.S. censuses and other public reports at least from 1873 to 1960. The Smithsonian Institution publication by Dr. Julian H. Steward entitled "Basin-Plateau Aboriginal Socio-Political Groups" (OCS-67), which includes the results of his ethnographic field work with the Western Shoshone in 1935, is a most valuable source of information on the location of the Western Shoshone communities. Dr. Steward visited eighteen of these communities and recorded ethnographic information about each locality from elderly Western Shoshone who had spent their lives in those areas. Being interested primarily in the ancient



Map 1. Boundary of Shoshone Indian territory (O. Stewart, 1957).

ways of life of the various groups of the Western Shoshone, Dr. Steward did not record the numbers of Western Shoshone in each Indian village, but he made the point that the various localities scattered over the entire extent of Western Shoshone country had been continuously occupied by the same people since time immemorial. Dr. Steward found ancient informants in the following places:

1) Reese River Valley
2) Great (Big) Smokey Valley
3) Smith Creek Valley
4) Morey
5) Hamilton
6) Ely
7) Spring Valley
8) Egan Canyon near Steptoe Valley
9) Ruby Valley
10) Diamond Valley
11) Elko
12) Battle Mountain
13) North Fork of the Humboldt River, South of Owyhee
14) Belmont
15) Beatty
16) Lida
17) Death Valley, California
18) Little Lake, California

It is interesting to note that the northernmost community is at North Fork, almost beside the Duck Valley Reservation established for Shoshone and Paiute in ancient Paiute territory.

The second source from the 1930's is the ethnobotanical study by Dr. Percy Train of the University of Nevada, Department of Botany (OCS-52). Dr. Train and his assistants did field research for the purpose of collecting, identifying and analyzing all the native medicinal plants used by the Indians of Nevada. This research required the finding of old Indians, especially medicine men (shamans), and then obtaining the services of the informants, usually with the aid of small monetary contributions, to guide the botanists to the growing medicinal plants so the specimens could be collected properly for research in the university herbarium and laboratories. Only a person familiar with a particular area could be helpful. The map showing where collections were made in Western Shoshone Indian territory is schematic, yet the wide distribution is impressive and supplements and expands the data from Dr. Steward. These sources, together with the less explicit

distributional material from U.S. and BIA census reports, leave no doubt that the Western Shoshone Indians, at great sacrifice in material goods and services supplied to reservation Indians, maintained their cultural ideal of living in their ancient homeland if possible.

Another point in this regard should be made, i.e., the Western Shoshone were not simply left alone in the ancient territory. Rather, pressure was applied periodically for over a half a century for the Western Shoshone to join other Shoshone or non-Shoshone Indians on reservations established beyond the limits of Western Shoshone territory. This was, of course, BIA policy of assembling all of the Indians on a limited number of reservations for economy of administration. Such a policy is pronounced explicitly in many treaties and executive orders establishing reservations, that the federal government reserved the right to place any Indians on any reservations. Thus the Duck Valley Reservation established on ancient Northern Paiute lands on both sides of the Idaho-Nevada state line was intended to be occupied by any and all nonreservation Indians in Oregon, Idaho and Nevada. A number, but not all, of the Western Shoshone known as White Knife Shoshone (Tosawi) living nearest the Northern Paiute of north central Nevada who had established friendly intertribal relations, took advantage of the protection and material benefits provided by the government to occupants of the Duck Valley Reservation and moved onto it with the Northern Paiutes. (In a 1934 Congressional Hearing published transcript, they are designated the White Knight Shoshone (OCS-46; p. 14824). From 1877 to 1950, the Western Shoshone Indians on Duck Valley Reservation have constituted a minority of the total number of identifiable Western Shoshone. This number has remained fairly steady in spite of frequently repeated efforts by the BIA to settle all "scattered" Western Shoshone at Duck Valley.

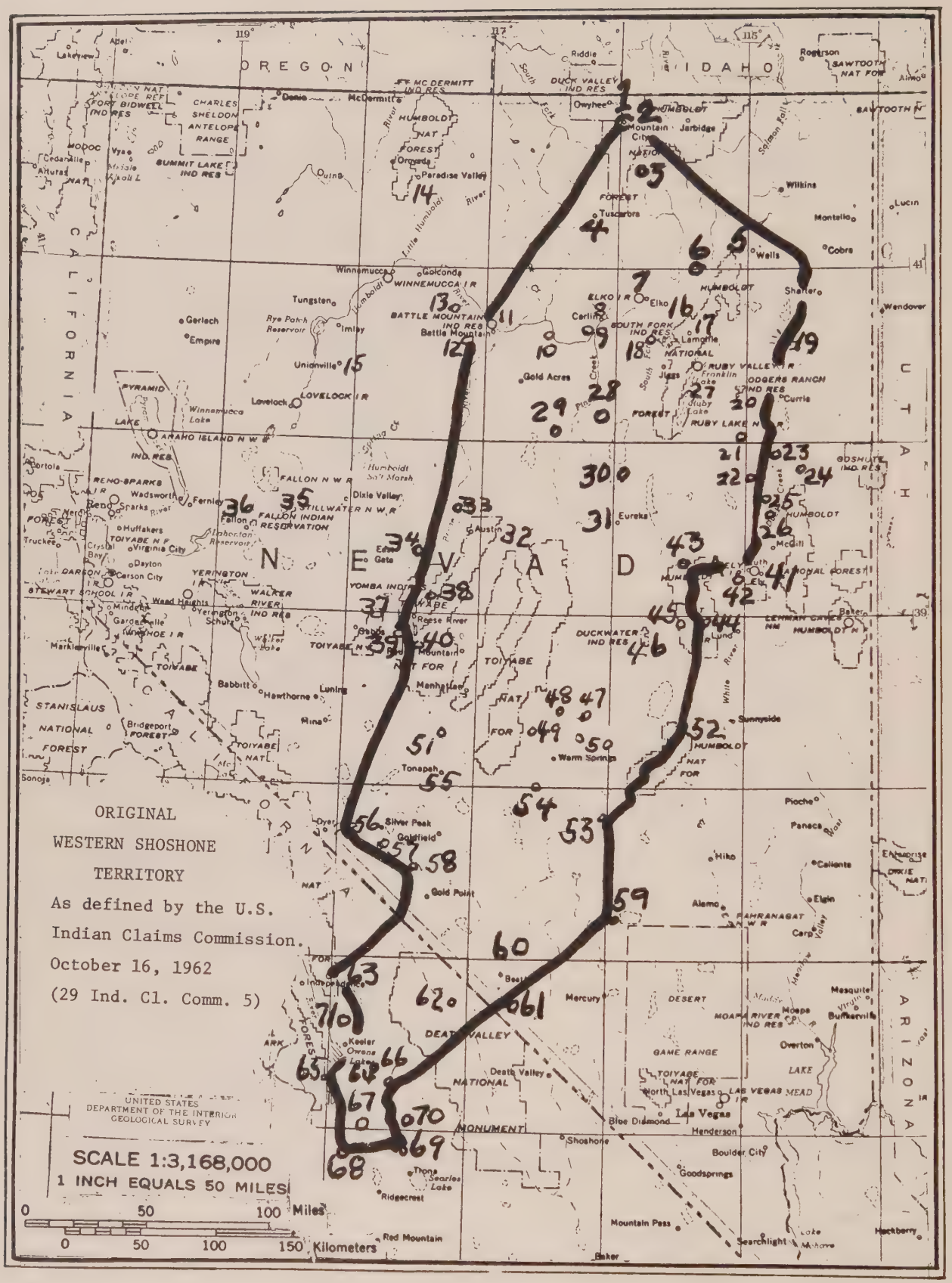
A similar, but smaller, effort attracted a few families of Shoshone to leave dry Reese River Valley and to go west over the mountain and settle on irrigated farms provided on the Stillwater Reservation near Fallon, Nevada. These immigrants can be combined with those at Duck Valley, and still equal only about a fourth of the Western Shoshone in an average year. Population figures for Western Shoshone are always a bit uncertain because of the movement of families.

Early Times

The Shoshone Indians of Nevada were met by the first European travellers through their territory in the early 1800's.

MAP KEY

1. Owyhee
2. Mountain City
3. North Fork
4. Tuscarora
5. Wells
6. Halleck
7. Elko Colony
8. Carlin
9. Palisade
10. Beowawe
11. Battle Mountain Indian Reservation
12. Antler Peak
13. Battle Mountain
14. Paradise Valley
15. Unionville
16. Elko
17. Lamoille
18. South Fork Purchase
19. Spruce Mountain
20. Ruby Valley Indian Reservation
21. Cherry Creek Mountains
22. Egan
23. Cherry Creek
24. Spring Valley
25. Egan Range
26. Steptoe
27. Ruby Valley
28. Mineral Hill
29. Cortez
30. Diamond Valley
31. Eureka
32. Austin
33. Reese River Valley
34. Smith Creek Valley
35. Stillwater
36. Fallon
37. North Shoshone Peak
38. Yomba Indian Reservation
39. Shoshone Mountains
40. Yomba Indian Reservation
41. Ely
42. Kimberly
43. Mount Hamilton
44. Duckwater Mountain
45. White Pine
46. Duckwater Indian Reservation
47. Morey
48. Fishlake
49. Belmont
50. Hot Creek Valley
51. Big Smoky
52. Troy Peak
53. Lat. 37°45'N, Long. 116°W
54. Kawich
55. Tonopah
56. Lat. 37°45'N, Long. 117°50'W
57. Silver Peak Mountains
58. Lida
59. Lat. 37°15'N, Long. 116°W
60. Beatty
61. Cararra
62. Death Valley
63. Lat. 36°50'N, Long. 118°W
64. Darwin
65. Upper Haiwee Reservoir
66. Maturango Peak
67. Little Lake
68. Brown
69. Argus Peak
70. Argus Range
71. Inyo Mountains



Map 2. Original Western Shoshone Territory, as defined by the U.S. Indian Claims Commission, October 16, 1962 (29 Ind. Cl. Comm. 5).

In 1863, they were recognized as a separate group of Shoshone by Treaty Commissioners James W. Nye, Governor of Nevada Territory, and James Duane Doty, Governor of Utah Territory, who designated them Western Shoshone, to distinguish them from Goshute Shoshone to their east, and from Northwestern Shoshone, living mostly in Idaho and Utah. An unusual feature of the Western Shoshone treaty is the condition providing explicitly that reservations for their use would be established in their own country. Subsequent history of the Western Shoshone supports the opinion that Chief Temoak of Ruby Valley, while the treaty was being signed, and the other Western Shoshone chiefs had specified that their permanent reservation should be located within their homeland. The fact that Western Shoshone have remained scattered widely within that traditional Western Shoshone country is evidence that we are dealing with a special, deep-seated cultural pattern which places high value on living within an aboriginal territory.

Such continuity of residence in the homeland might be more readily understood if large and valuable reservations had been established for the Western Shoshone as provided for in the 1863 Doty-Nye Treaty, or if the entire region was particularly fruitful and productive. Neither is the case. The region is dry and barren in general, suited for mining and ranching. In 1970, only 27,795 people inhabited the four counties included in the treaty area defined by Doty, with a total of 37,822 square miles, slightly more territory than that of Maryland, Massachusetts, New Jersey and New Hampshire combined. The first known enumeration of the Western Shoshone was made by Powell and Ingalls in 1873 (OCS-82, p. 105). They listed 1,946 Western Shoshone Indians in 34 groups under 29 different chiefs in or near the territory defined in the Nye-Doty Treaty.

Table 1 - Western Shoshone Indian Population According to Powell and Ingalls, 1873 (OCS-82) and U.S. Census Report, 1880-1950, reveal that these Indians have remained in the counties where they lived at the time of the treaty.

According to a note by Royce to his maps of Indian Land Cessions (1899, OCS-83, pp. 822-823), a reserve six-miles square was established in Ruby Valley in 1859. Royce's note is incomprehensible. "After being occupied and cultivated for several years it was abandoned and subsequently became a station for the Overland Stage Company." This has the appearance of federal neglect in the protection of the Indians in dealings with the whites. What was meant by abandoned? Chief Temoak was still living in Ruby Valley on Overland Creek in 1863 when the Doty Treaty Commission met him there and assembled eleven other Western Shoshone Chiefs

there to sign a treaty of peace. Mills (OCS-77) wrote that "In 1859, William Rogers, better known as Uncle Billy, was sent to Ruby Valley to act as Indian agent there . . . That same year he built a house in Ruby Valley the first in Elko County, in what was later to become the Overland Stage Company's Farm." Since the Temoak family continued to live in Ruby Valley and Chief Temoak was first "Chief of Alliance" with Chiefs Ts-Sho-Win-Tsogo and Mose as leaders of 172 Western Shoshone in Ruby Valley in 1873, and since the Shoshone have been in Ruby Valley continuously from 1863 to 1973, it is difficult to explain the Royce note except as a reflection of official neglect. Thus, the Indians in Ruby Valley lost a whole township of land which contains 23,040 acres. Although remaining in Ruby Valley, the Indians were finally guided to prove up on 37.7 acres in 1880 (see 1932 Survey, OCS-46, p. 14876). The Indians remained and were subject to many reports thereafter, so that now it is sufficient to point out that the documented continual occupation of Ruby Valley from before 1859 to 1973 is proof that the Western Shoshone have an unusually strong attachment to Nevada landscape, poor and barren as it is. Ruby Valley will receive attention repeatedly, but serves here to set the stage for all Western Shoshone.

Powell and Ingalls (OCS-82, p. 99) reported that the Western Shoshone were "divided into small tribes, several of which we have visited," and added "they fully understand that the settlement of the country by white men is inevitable, and know the folly of contending against it; and they earnestly ask that they may have lands of their own and be assisted to become farmers and stock raisers, but especially do they ask to have cattle." Powell and Ingalls continue:

> Now the most important difficulty in the way of collecting these people on reservations, is the fact that each small tribe desires a reservation somewhere within the limit of its own territory, which is manifestly impracticable, as the Indians could not thus be protected in their rights, except at a great expense (OCS-82, p. 99).

In 1873, the Western Shoshone requested reservations in the places that they had lived. When visited by Mr. Ingalls or by Levi Gheen on behalf of the Commissioners, the Western Shoshone "were cultivating the soil to a very limited extent. Some of them were employed by white men as herders and in other labors. They gather the seeds and fruit, dig roots, hunt and fish, and eke out a miserable subsistence by begging" (OCS-82, p. 99). Mining camps and

TABLE 1, PART 1

WESTERN SHOSHONE INDIAN POPULATION ACCORDING TO POWELL AND INGALLS, 1873, AND U.S. CENSUS REPORTS 1880 TO 1950

	Paiute and Shoshone Duck Valley Reservation	Five County Total Non-Reservation	Elko County (not including Duck Valley)	Eureka County	Lander County	White Pine County	Nye County
1950	966**(OCS-76)	1,180	379**(OCS-76)	63 (OCS-92)	206**(OCS-76)	149**(OCS-76)	383 (OCS-92)
1940	554 (OCS-33)	1,239	421 (OCS-91)	69 (OCS-91)	222 (OCS-91)	153 (OCS-91)	374 (OCS-91)
1930	688 (OCS-46)	916	45 (OCS-90)	91 (OCS-90)	263 (OCS-90)	151 (OCS-90)	366 (OCS-91)
1920	675 (OCS-46)	918	64 (OCS-89)	60 (OCS-89)	206 (OCS-89)	121 (OCS-89)	467 (OCS-89)
1910	550 (OCS-93)	990	53 (OCS-88)	121 (OCS-88)	94 (OCS-88)	199 (OCS-88)	523 (OCS-89)
1900	439 (OCS-86)	1,286	368 (OCS-87)	179 (OCS-87)	160 (OCS-87)	207 (OCS-87)	372 (OCS-86)
1890	586 (OCS-81)	1,529	301 (OCS-81)	194 (OCS-81)	382 (OCS-81)	238 (OCS-81)	414 (OCS-86)
1880	250***	1,214	372 (OCS-85)	288 (OCS-85)	224 (OCS-85)	280 (OCS-85)	50 (OCS-85)
1873	0	1,946	460 (OCS-82)	116 (OCS-82)	724 (OCS-82)	161 (OCS-82)	310 (OCS-82) 175*

* Powell & Ingalls, 1873 (OCS-82), p. 105: Western Shoshone in Unionville in Pershing County, 175.

** "Investigation" 1952.

*** 1882, OCS-1K.

TABLE 1, PART 2

PERCENTAGES OF WESTERN SHOSHONE LIVING ON AND OFF THE DUCK VALLEY RESERVATION

Year	Off Reservation	On Reservation[1]	Total	Percentage Off Reservation	Percentage On Reservation
1950	1,180	678	1,858	63.51%	36.49%
1940	1,239	446	1,685	73.53%	26.47%
1930	916	273[2]	1,189	77.04%	22.96%
1920	918	352[3]	1,270	72.28%	27.72%
1910	990	373[4]	1,363	72.63%	27.37%
1900	1,286	224	1,510	85.17%	14.89%
1890	1,529	383	1,912	79.97%	20.03%
1880	1,214	250[5]	1,464	82.92%	17.08%
1873	1,946	0	1,946	100.00%	none

[1] Taken from "Western Shoshone column, Table 11 (it should be noted that Col. 1 in Table 1, Part 1, includes all Indians, including Paiutes and others, on the Duck Valley Reservation--not just Western Shoshone).

[2] Taken from 1932 figure, OCS-46, p. 14910.

[3] Taken from 1921 figure, OCS-22.

[4] Taken from 1911 figure, OCS-93.

[5] Taken from 1882 figure, OCS-1K.

railroad stations attracted the Indians to provide labor for men and women and to offer chances for begging, so that Powell and Ingalls often reported Western Shoshone in the towns or camps where Indians congregated when not roaming widely to hunt and gather. Along the railroad, completed in the area in 1868, and becoming a transcontinental route in 1869, which followed the Humboldt River, Powell and Ingalls found Western Shoshone at Halleck, Elko, Palisade, Carlin, and Battle Mountain, 458 Indians along one hundred miles of railroad. North of the railroad, 80 Indians were at White River, Elko County. South of the Humboldt River and railroad, Western Shoshone were in White Pine County at Hamilton, where Levi Gheen had helped them establish a farm for 101 Indians, and Spring Valley, where 60 Indians lived as neighbors to the Goshute, who lived mostly in Utah near Ibapah Mountain and east from there.

Along the western edge of Western Shoshone country, the Reese River Valley extended about 100 miles south from Battle Mountain through Lander County. In 1873, Reese River Valley and Austin were claimed as home for 530 Shoshone divided into seven small groups. It is probable that the 175 Shoshone listed for Unionville, an old mining camp in Northern Paiute country, came from Reese River Valley. Along the southern border of Western Shoshone land in 1873, Indians were identified with six localities in northern Nye County. These areas, with the numbers of Indians were:

Belmont - 116
Hot Creek - 22
Big Smokey Valley - 25
Morey - 25
Fish Lake - 62
Duckwater - 60

with a total population of 310. Several of the place names will appear later. By 1880, seventeen years after the signing of the Nye-Doty Treaty, the white population in the four counties was reduced to 1,164 (OCS-85), in addition to the 250 Western Shoshone on Duck Valley Reservation (OCS-1K). Although some help was given the off-reservation Shoshone during the years between 1860 and 1880, by the latter date, that slight help seems to have disappeared.

The 1872 Report of Agent C. A. Bateman (OCS-1A) for all of Nevada is particularly revealing for the Western Shoshone:

> The issue of rations to Indians has, with only a single exception, been to those upon the reservations, discarding all pleas for rations to roving bands or scattered individuals. The case above hinted at was at Battle Mountain, where the Shoshone were gathered in large numbers, in a most destitute condition.....

Agent Bateman explained the basis for his cruel order:

> . . . It requires but little discernment to discover the utter inadequacy of $15,000 in currency to provide for the Indian service in Nevada. . . . Teams, farming-utensils, seeds, transportation, and salaries are all to be provided from this appropriation . . . .

In 1873, Levi Gheen was a government farmer stationed at Hamilton (OCS-1C and 1D), but by 1877, he was devoting himself to Carlin and Duck Valley (OCS-1E and 1F). In 1878, Gheen wrote (OCS-1G at p. 104):

> The Western Shoshone Indians are peacable . . . . most of whom are south of the railroad, reside permanently on little farms....
>
> "Twenty-one of these ranches have been cultivated this year . . . . Nearly all of the land so cultivated by Indians belongs to white people."

In 1877, Gheen had been authorized to purchase farming utensils and seed, "at a cost not to exceed $337.50 currency" (OCS-1F, p. 152).

Carlin, Nevada became a devision point on the Central Pacific Railroad in 1868, and Western Shoshone Indians congregated there so that by 1873, Powell and Ingalls found 82 there (OCS-82, p. 105). The next official notice of Carlin was delayed until 1877, but the Elko Independent took editorial notice of the Shoshone at Carlin in January, 1872 (OCS-46, p. 14868):

> Last Thursday a car arrived loaded with blankets, etc., supposed to be for the distribution among the Indians who collected in town each expecting to receive a blanket . . . . but only three or four got a blanket . . . . The majority got nothing.

Then, on May 10, 1877 (OCS-1G, p. 261), a 522-acre farm was established at Carlin, Nevada, by Executive Order. Farmer Levi Gheen appeared to have been in charge, but he did not reside at Carlin.

Since the Carlin farm reservation was discontinued by Executive Order January 16, 1879 (OCS-1H, p. 216), it might be forgotten were it not an example of abandonment of a reservation well within Western Shoshone country as stipulated by the 1863 Treaty in favor of a reservation beyond the limits of Western Shoshone Country.

Carlin farm also figured prominently in the testimony received by Senator Lynn J. Frazier of North Dakota, and Senator Elmer Thomas of Oklahoma, during hearings in Elko, Nevada on September 16, 1932, during a Survey of Conditions of Indians in the United States.

During the hearings (OCS-46), it was reported (p. 14856) that a Mr. Palmer started the Carlin reservation, that was brought up in 1932 because 500 cattle first given to Chief Temoak for his reservation, six miles square on Overland Creek in Ruby Valley, were forcibly removed by a white man, a Paiute and ten Shoshone, including Captain Sam and Captain Buck, from Ruby Valley to Carlin farm. Chief Temoak had retained the cattle "six-seven years." The explanation given Temoak was that he had to remove to the Duck Valley Reservation in order to regain his cattle, but he received nothing for the cattle and Chief Temoak, his family and friends remained on Overland Creek, Ruby Valley. In an affidavit cited in the Survey of 1932 (OCS-46, p. 14866), Joseph W. Smith reported that he knew Mr. Palmer of Carlin, who took Chief Temoak's cattle in 1873 or 1874. It was also reported the cattle from Ruby Valley were finally taken to the Duck Valley Reservation.

In 1879, a new U.S. Indian Agent at Duck Valley Reservation reported further on Carlin farm (OCS-1H):

> . . . About 300 . . . Indians were farming on lands supposed at the time to belong to the United States, and known as the Carlin Farms, being under the Nevada agent, Colonel Barnes . . . . .
>
> **********
>
> Early in March they called a council at Carlin . . . and the concentration of the tribe at Duck Valley

> fully discussed . . . . The Carlin Indians, who had been doing well on their farms, were reluctant to leave, and could not understand why the land which they had occupied for years, . . . could not be held by Washington . . . . (see also OCS-51, 55 and 61).

In March, 1879, John H. Kinkead, Governor of Nevada, wrote to Carl Shurz, Secretary of the Interior (OCS-60), supporting the Indians in their demand to stay on their 1,000-acre farm at Carlin, Nevada. Nine citizens of Carlin joined the Governor in pleading for justice for the Carlin Shoshone (OCS-62).

With the establishment of the Western Shoshone Agency office on the Duck Valley Reservation, with its U.S. Post Office at Owyhee, Nevada, in 1882, almost all reports regarding the Western Shoshone were concerned with happenings on the Duck Valley Reservation to which we now turn.

Although designated the Western Shoshone Agent at the start of his tenure in office in the fall of 1878, Agent John How visited the Goshute and invited them to Duck Valley Reservation (OCS-1H, p. 111). This was done notwithstanding the Executive Order of April 15, 1877, establishing the Duck Valley Reserve, declaring it was "set apart as a reservation by the Western Shoshone Indians" (OCS-1G, p. 261). Another unpublished report of Agent John How, October 21, 1878 (OCS-57), tells of visiting Duck Valley and finding few Indians, yet sending runners to invite chiefs to a council at the town of Cornucopia, Nevada. He sent messengers 60 miles north of the reservation to the Idaho town of Bruneau on Bruneau River near its entry into Snake River. Since Duck Valley is outside of Western Shoshone country, an additional 60 miles would be deep into Northwestern Shoshone or Paiute Country. Thus, it appears from the first establishment of Duck Valley Reservation that Shoshone from Idaho bands, as well as Northern Paiute, were invited onto the reservation. An Indian policeman named Bruno John was messenger to the Bruneau River country, which is entirely outside of Western Shoshone territory. Agent How's report for 1880 reveals that he did not consider that Duck Valley Reserve was to be limited to Western Shoshone Indians. He reported (OCS-11, p. 127):

> The Shoshones realize that they now have a home. . . That the reservation is popular with the Indians is shown in the fact that early in February last, while the snow was 2 feet deep on the roads, 103

> Indians arrived at the reserve, and said they had come to stay - it was their right, they said- and stated that they were from Paradise Valley, 150 miles from the reserve.

Agent How could have known that Paradise Valley was 36 miles west of the boundary line of the Western Shoshone territory. By the Northern Paiutes' speech, How could not help knowing that the people from Paradise Valley were not Western Shoshone. The Paiute were accommodated and assigned farming land on the Duck Valley Reservation in 1880. In a letter of May 1, 1880 (OCS-64A), Agent How reported the manner in which both Shoshone and Paiute explained their distinctiveness. In spite of his efforts to move all Shoshone onto Duck Valley Reservation, in 1881, Agent How reported having "assisted four settlements, one each in the following valleys: Clover, Lamoille, and Cherry, and at Mineral Hill, with plows" (OCS-1J, p. 133). How wrote that the Indians averaged in each place 50 souls, yet he also wrote:

> The office of agent of the Western Shoshones is no sinecure, and we deliver supplies to none off the reservations but the indigent; they having the offer of the Reservation Home where they would be cared for, and having declined, I have not thought it proper to follow them to their various homes . . . .

Since the U.S. Census for 1880 reported less than one-quarter of the Western Shoshone located on the Duck Valley Reservation, Agent How's practice of devoting nearly all money available for Western Shoshone to those on the reservation appears both unjust and cruel. In fact, in the letter to BIA, May 24, 1880 (OCS-64), Agent How recounted that his original order was to take care of all the Western Shoshone; consequently, had established his office at Elko to be central to the Western Shoshone "in seven counties."

In trying to find a reason for the selection of the Duck Valley for the Western Shoshone reservation, it might be wise to keep in mind that the Nez Perce and Bannock wars were developing immediately to the north of the Nevada Shoshone (OCS-94). That protection of white settlers of northern Nevada may have been a factor in the choice of Duck Valley is supported by the reports of Agents Barnes and Gheen (OCS-46, pp. 14962-14963). The report of Barnes sent to the Commissioner of Indian Affairs in 1878 was as follows:

> An agreeable event of the year was a visit from Pee-sent-yi or Captain Sam, an influential Shoshone

> of Duck Valley .... He had steadily refused to join the Bannocks, although they had come to him and his people; attempted to arouse their prejudices against the whites whom they designated a common enemy; threatened them with loss of life and property and yet Pee-sent-yi was bold through all. He replied to them that he had entered into treaty with the United States and would adhere to it.

Levi Gheen, farmer in charge of United States Reservations, September 4, 1878, wrote as follows:

> He (Temoak) strongly recommends, as the Duck Valley Reservation was the only land unclaimed in the State which was fit for the purpose, that every possible means be used to make it attractive to the Indians. . . . Over 1,000 Shoshones are employed farming for themselves south.
>
> A Shoshone, known by the whites as Bruno John, Indian name Anytaticko (salmon-water) who saved many lives by riding day and night to give the promised notice.
>
> The confidence I have always expressed to the Department in the good will and friendship of the Shoshones toward the whites was fully sustained.

A number of the figures in the reports of Agent How for the years 1879, 1880, and 1881, appear unrealistic. On charges of forgery, fraud, and perjury, Agent How was dismissed and it is possible Indians on Duck Valley suffered, as well as the statistics. In his first report in 1882, Agent John S. Mayhugh said the Agency was "in a most wretched and broken up condition" (OCS-1K). The mismanagement by How of Western Shoshone funds sent to the Duck Valley Reservation, 1879-1881, probably meant that the Shoshone on the Duck Valley Reservation suffered as well as did those who refused to go there. The mismanagement by Agent How is also reflected in the second annual report of Mayhugh (OCS-1L), who reported in 1883, he had finally removed three white squatters from the best Indian land which had been "long desired by the Indians."

In 1882, John S. Mayhugh (OCS-1K), successor to How, found only 250 Shoshone Indians on the Duck Valley Reservation and listed

275 not on a reservation as follows: Elko County, Tuscarosa - 40; Elko - 20; Carlin - 25; Eureka County, Palisade and Eureka - 40; Lander County, Battle Mountain and Austin - 50; and 100 scattered in the eastern part of Nevada (see Table II).

The U.S. Census of 1890 (OCS-81) provides the next summary of conditions of the Western Shoshone. Duck Valley Reservation was enlarged by adding 74,480 acres in Idaho to accommodate 150 nontreaty Paiute Indians from Oregon. This appears very generous in contrast to the complete absence of help accorded to 1,529 Western Shoshone still living in their ancestral home also reported by the 1890 Census (OCS-81, p. 395) as "very poor, ignorant and superstitious and have no property except a few ponies."

Modern Times

The Western Shoshone Agency at the Duck Valley Reservation received nearly all of the space in the BIA reports devoted to the Indians of northwestern Nevada from 1880 to 1930. The few exceptions can be listed easily and they serve to emphasize the neglect of the Western Shoshone Indians during that period by the small number of such reports. Except for their being counted in the U.S. Census each decade, the nonreservation Western Shoshone would easily become lost. The non-Indian reservation population in the five counties of the aboriginal Western Shoshone area fluctuated between 1,529 in 1890 and 1,180 in 1950. These were absorbed in the group of about 5,000 Indians listed annually and carelessly as "scattered" individuals or nonreservation Indians of Nevada. The frequently repeated same figure year after year implies carelessness or simply lack of concern. The numbers of this nonreservation population were found in the BIA sources available in the Government Document Division of the University of Colorado.

From the Survey of Conditions, 1932 (OCS-46, pp. 14871-14873), comes information that a BIA employee, C.H. Asbury from Reno, visited the Temoak family in Ruby Valley in December, 1912, and assured the Indians that they had the right to all the water in Overland Creek that they could use. The Shoshone of Ruby Valley did not have the water and they were concerned about the six miles square of Ruby Valley they had been given in 1859, so they wrote the BIA, Washington, in 1919. Commissioner E.B. Merritt replied (OCS-46, 14880) that the BIA had no record of the 1859 six-mile square reservation and, further, he had no record that the Indians had any water rights. The sequel is not published, but the files of

the National Archives contain a report of Inspector Samuel Blair, filed March 13, 1926, concerning the effort of Blair to buy land and water rights for the Shoshone of Ruby Valley with $25,000 that had been appropriated by Congress for that purpose. The purchase had to be made in a year's time or the money would revert to the general fund, which appears to have occurred. These were the happenings which led to an investigation by Messrs. Reed and Snyder in 1929, into the water situation in Ruby Valley. It was unresolved by 1932, so that Senators Frazier and Thomas received these documents and heard testimony in 1932 concerning the way the Ruby Valley Shoshone were "given" land and water rights by the BIA for their homeland, but later discovered someone else owned the land and the water the Indians of Ruby Valley had been assured belonged to them.

In the 1930's, the Temoak Band of Western Shoshone of Ruby Valley represented only the central and historically the best-known group of Shoshone in the area. Ruby Valley could attract a personal visit from a U.S. Senate Subcommittee on September 16, 1932, but that should not be taken to mean that the other nonreservation Western Shoshone were either less numerous or less important.

An examination of Table I for 1930 reveals nonreservation Indians in Elko County, which includes Ruby Valley, Elko, Wells, and Carlin, totalled only 45 of the 916 nonreservation Indians in the five Nevada counties within the ancient Western Shoshone homeland. From habit, the 45 Ruby Valley Shoshone might make more noise and attract more official notice than the 871 traditional Shoshone trying to live according to the old Shoshone way in the remainder of their aboriginal territory in Nevada.

Fortunately, two non-BIA research projects in the 1930's were concerned with all the Western Shoshone. The first in time was the ethnographic research of Dr. Julian H. Steward, who did an extensive study of the Western Shoshone under the auspices of Professor A.L. Kroeber, University of California, Berkeley, but soon after became affiliated with the Bureau of American Ethnology, Washington, D.C., and worked some for the Bureau of Indian Affairs. In two publications (introduced in part as Exhibits OCS-51 and OCS-67), Dr. Steward reported results of interviews with aged Western Shoshone informants in eighteen localities of their aboriginal habitat. Ruby Valley was one of the places visited by Dr. Steward. There he found aged informants to report on local Ruby Valley home life of aboriginal times. The additional point of Dr. Steward's research (OCS-67), however, is that he interviewed

TABLE II

DUCK VALLEY RESERVATION - POPULATION - 1882-1950

Year	Total	Western Shoshone	Source
1882	250	250	OCS-1K
1883	350		OCS-1L
1886	380	230	OCS-41 & 81
1887	411	296	OCS-3
1888	475	335	OCS-4
1889	477	345	OCS-5
1890	586	383	OCS-6 & 81
1891	590	367	OCS-7 & 8
1892	609	403	OCS-9
1893	628	419	OCS-42
1894	623	411	OCS-43
1895	618	408	OCS-10
1896	620	406	OCS-11
1897	620	406	OCS-44
1898	556	329	OCS-12
1899	572	296	OCS-13
1900	450	224	OCS-14
1902	450	226	OCS-15
1903	505	235	OCS-16
1904	509	238	OCS-17
1911	550	373	OCS-93
1920	675		OCS-46 (p. 14910)
1921	671	352	OCS-22
1924	692		OCS-24
1925	679		OCS-25
1926	680		OCS-26
1927	702		OCS-27
1928	690		OCS-28
1930	688		OCS-46 (p. 14910)
1932	690	273	OCS-46 (p. 14910)
1937	732		OCS-70
1939	552	453	OCS-45
1940	554	446	OCS-33
1941	554	446	OCS-34
1945	811	554	OCS-76 (p. 965)
1950	966	678	OCS-76 (p. 965)

Note: Blanks indicate no information available.

seventeen other old Western Shoshone who still lived in their home territory and could tell about their local culture. It appears to me very remarkable that small communities of Western Shoshone should have survived in their local, isolated communities for over a half century after they were enumerated in those places by Powell and Ingalls in 1873 (OCS-82).

Steward interviewed elder statesmen of the local Shoshone communities in Death Valley and Little Lake, California, in Nevada at Lida, Esmeralda County, and in Nye County, at Belmont, at Great (Big) Smokey Valley, at Beatty, and at Morey. In Lander County, he found aged Western Shoshone still in their ancient homeland in Reese River Valley, in Smith Creek Valley, and at Battle Mountain. In Elko County, one of the largest in the United States, Julian Steward met ancient Shoshone informants on the North Fork of the Owyhee River near Duck Valley, at Elko and at Ruby Valley. In Eureka County, the Western Shoshone settlement was found at Diamond Valley. Elder Western Shoshone were found by Steward in 1935 in White Pine County, at Ely, at Spring Valley, and at Egan Canyon near Steptoe, as well as at Hamilton. Steward explained the role of Temoak as a peacemaker in early settlement times and identified the White Knife Shoshone as living around Battle Mountain and hunting to the north toward Duck Valley.

Another ethnological study during the 1930's was that of Jack Harris, which dealt almost exclusively with the White Knife group (OCS-53). From Harris' account, it is clear the White Knife group which finally supplied most of the Western Shoshone to Duck Valley Reservation considered themselves as an important separate band of Shoshone, and that Captain Sam played a leadership role along the Shoshone-Northern Paiute border comparable to that of Temoak in Ruby Valley (p. 77).. Harris learned from his Shoshone informants that they were sensitive to discrimination from whites. On page 111, he prints the following quotation:

> "the White men . . . working on the same project are paid five dollars a day while we get only a dollar and a half."

Harris also wrote (pp. 82-83):

> The social position of the Indians at this time is sharply reminiscent of that of the Negro at present in some Southern communities. The Shoshoni are described as lazy, shiftless, ignorant,

> and thieving. In one instance, at least, the killing of a White man by a drunken Indian resulted in the death of four other Indians by an angry mob that also captured the original murderer from the town officer and lynched him.

The above brings to mind the comment by historian H.H. Bancroft, written in 1890, stimulated by a report of trouble in 1874-1875 on Cleveland Ranch at the eastern edge of Western Shoshone land (OCS-80):

> Owing to the milder disposition of the Nevada tribes, as well as the swift vengeance by which any resistance was met, the state has suffered less than some others by Indian wars. Probably 250 or 300 white persons have been killed by Indians in Nevada, while ten times that number of savages have suffered death at the hands of white men.

Botanist Percy Train also visited the main areas of Western Shoshone Indians during the 1930's. He made collections of Shoshone medicinal plants and published a map to indicate the region from which his ancient informants had collected plants for him. In each of fourteen districts from Duck Valley in the north to Smokey Valley in the south, living informants knew intimately the location of local plants used by Shoshone as medicine (OCS-52). Dr. Train's research establishes the fact that some important aspects of Western Shoshone culture were still strong and that those aspects of culture were still widely practiced throughout the ancient land of the Western Shoshone.

It was in 1930 that the U.S. Senate Committee on Indian Affairs obtained Senate authorization and funds for an exhaustive Survey of Conditions of the Indians of the United States, which led to Senators Frazier of North Dakota, Thomas of Oklahoma, Oddie of Nevada, and Congressman Arentz of Nevada, and staff members, to visit Ruby Valley and Duck Valley and to hold extensive hearings in Elko on September 16, 1932, and at Owyhee on September 17, 1932. The public report (OCS-46) devotes slightly more than 100 pages to the Western Shoshone history of the needs of the Western Shoshone as of 1932. Documents of earlier research and testimony were incorporated into the report. Some of the topics covered by that report have been mentioned previously, but it appears important to reiterate that the published hearings of 1932 (OCS-46) fully document the repeated failure of the U.S. Government to provide to the Western Shoshone people as a whole the funds promised in the 1863 Treaty

signed in Ruby Valley. The hearings recorded Western Shoshone living in 1932 in a number of different localities, some not previously mentioned. Besides the Duck Valley Reservation, Western Shoshone were listed in the report (OCS-46) at the following places: on page 14810, Wells, Star Valley, Elko, Battle Mountain, Cherry Creek, Pleasant Valley, Ely, Beowawe, Crotez, Grass Valley; on page 14815, Ruby Valley, Halleck, Lamoille, South Fork of the Humboldt; and on page 14828, Steptoe Valley and Smith Creek.

In numerous places in these hearings and in various ways, the Western Shoshone not on the Duck Valley Reservation communicated their strong feelings that they did not consider that Duck Valley Reservation fulfilled the promise of the Ruby Valley Treaty of 1863. Carson Agency Superintendent Frederic Snyder, responsible for the off-reservation Western Shoshone, reported (OCS-46, p. 14821) "in the neighborhood of 800" such Indians. Superintendent E.E. McNeilly of Duck Valley Reservation reported the following population figures for 1932 for the reservation: Shoshone, 273; Paiute, 212; mixed Shoshone and Paiute, 195; others, 10, for the total reservation population of 690 (OCS-46, p. 14896).

Although a document previously cited (OCS-11, p. 127) indicates that 103 Northern Paiutes were allowed to settle on Duck Valley in 1880, the 1932 hearings emphasized the Northern Paiutes came there about 1886, and were settled at the north end of Duck Valley Reservation on about 75,000 acres added to the Idaho section of the reservation. The fact that Duck Valley Reservation is in two states raises some problems with interpreting U.S. Census data and integrating census figures with those from the BIA. Clearly, E.E. McNeilly was reporting on the population of the entire reservation, and it is interesting to see that over 50 years of joint occupancy of the reservation had not obliterated the ancestoral distinction between Northern Paiute and Shoshone inhabiting the same reservation. The awareness of differences in the two populations is maintained for several reasons and by several social forces. Notwithstanding the fact that there have been enough Paiute and Shoshone intermarriages to produce 195 Indians of mixed Shoshone-Paiute parentage by 1932, both Indians and Whites at Duck Valley are keenly aware of ancestry and geneology. Ancient feelings of fear of enemy tribes, as were the Paiute and Shoshone, have not disappeared. Marked language differences persist. Paiute and Shoshone are not mutually intelligible languages, although the two are different from one another about like French is distinct from Spanish. A minority Paiute usually learned Shoshone, as did the Bannock at Fort Hall, but the Shoshone seldome learned Paiute. The Paiute occupy a distinct and separate section of the reservation,

and all who live in that neighborhood are considered Paiute and looked down on and considered less advanced. These attitudes and practices to keep Paiute identity alive were observed by me when I did research with Northern Paiute informants on Duck Valley in 1936. The situation was still evident when I visited the Duck Valley Reservation a year ago. In 1972, I sought informants for data regarding the Peyote religion, which I have studied since 1937. At Owyhee, inquiry at the store and at the Agency left no doubt that the Peyote religion was considered an inferior Indian cult of the lowly Paiute. The slow process of integration by interbreeding does not appear to have greatly reduced the feeling of separateness between the Shoshone and Paiute, so that the two tribes will probably remain identifiably distinct indefinitely. Even if we assign to the Shoshone all Indians of mixed Shoshone-Paiute parentage, the total of 468 for 1932 would be equal to only about half of the 800 off-reservation Western Shoshone according to Snyder (OCS-46, p. 14821).

The meager old-age pension assistance of about $12.50 per month, and the fact that only $7,000 was available to help all off-reservation Indians in northern Nevada for 1932 (p. 14820), suggest a starvation diet even for that less inflated period.

The peculiar Nevada laws and practices regarding denial of Indian children the right to attend local public schools is touched on in the 1932 Survey (OCS-46, p. 14818). Segregation of Indian children is also reported in OCS-54 and in OCS-38, pp. 15-19.

The report by Professor Rusco (OCS-38) is most helpful for the evaluation of the social environment to which all the Indians of Nevada had to adjust from the treaty date of 1863 to the present. More completely dominated by miners, cattle ranchers and railroaders than any other state, Nevada legalized many practices which were prohibited in most other states. The two most unusual were general gambling, all types of games of chance, and prostitution with house marked with red lights visible at a distance. Nevada may have been notorious for decades also for its quick and easy divorce plan. It is not possible to demonstrate that the practices above which were legalized in Nevada were responsible for the mistreatment of Indians in that state, but they are mentioned as possibly contributing to culture patterns which were explicitly discriminatory towards Indians. Rusco writes, to introduce his study of <u>The Status of Indians in Nevada Law</u>,

> .... ours is a White racist society. . . . An adequate understanding of White racism requires

a full description of patterns of relationships among various racial groups, with historical depth and a theoretical explanation of these relationships. . . .

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When Nevada became a separate territory in 1861, its legal system clearly placed all non-Whites, including Indians, in an inferior position. One of the ways by which this was done was by laws extending rights or privileges to Whites only. As examples, voting and therefore the right to hold office and serve on juries were restricted to Whites only by territorial and state laws and constitutional provisions until 1880, although a decade earlier the adoption of the 15th Amendment of the federal Constitution invalidated the state restriction of voting to Whites. As other examples, Nevada's first law authorizing the licensing of attorneys restricted that occupation to Whites, militia duty was restricted to Whites by the territorial legislature, the first state legislature provided for free tuition for 'white male persons' but not others, and only White children were admitted to a private orphanage in Virginia City supported by state funds in the 1860's and early 1870's.

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From 1865 to 1872, Nevada law prohibited the education of 'Negroes, Mongolians, and Indians' in public schools. . . .

****

Beyond the statutes arising out of a general attitude that all non-Whites were inferior, there were in the 19th Century a number of legal aspects affecting Indians which were confined to that group, and which grew out of the fact that Indians had had separate societies, with their own laws based on their own values, before White conquest, and that in some ways they retained this separate identity after conquest . . . .

Return now to education. Rusco (OCS-38, pp. 16-18) wrote as follows:

> After 1872, Indian children were legally entitled to attend public schools, and by law were not excluded from the school census until 1897. But, in fact, very few Indian children were admitted to state schools until the 1920's, and only some were educated in schools run by the Bureau of Indian Affairs until well into this century. From 1897 to 1935, state school law reflected this situation, for it required the omission from the annual school census of Indian children of school age who were not actually attending school.
>
> There were some attempts by Indians to set up schools run by Indians but on a White model during the 19th Century. In the late 1860's, an Indian named Samuel C. Brown attempted to build a school in Virginia City, but this effort apparently ended when Brown was sent to the State Prison for stealing carpenters' tools and lumber. . . .
>
> Nevada Government played a role in establishment of the Carson School. In the late 1880's the Legislature began to memorialize Congress to establish Indian schools in Nevada, and two Superintendents of Public Instruction actively worked toward this end. Some of the reasons given for desiring education for Indians are indicative both of White conceptions of the inferiority of Indians and of Indian economic roles in White society. Superintendent of Public Instruction C.S. Young indicated in 1887, for example, that
>
> > "Our Nevada Indians should be educated. They are now an important factor in our Western civilization. They should be taught how to work, how to make a living; should be taught the principles underlying our government, and the duties of citizenship. They should be taught not only to read and write, but the various trades, domestic work, ranching - all kinds of handiwork.

> Then they might be substituted for Chinese servants, or other people foreign to our institutions and obnoxious to our American civilization."
>
> In 1887 the Legislature authorized Ormsby County to issue bonds in the amount of $10,000 to acquire land and construct buildings for an Indian school in the county. . . ."

Nevada passed a law against peyote in 1917 (OCS-38, p. 21) although historical evidence relating to the peyote religion which I have assembled makes it clear that Indian religion had not reached Nevada by 1917. Nevada joined Utah and Colorado in the dubious honor of passing laws to prohibit the use of peyote at the time the United States Congress was rejecting an act to outlaw peyote nationally. This serves only to demonstrate that the Nevada legislators had little regard for the religious freedom of Indians. In 1972, active branches of the Native American Church, the name under which the peyote religion is incorporated, were found among Western Shoshone and Paiute at Duck Valley and among Shoshone on South Fork and at Elko. In spite of the early antipeyote legislation, in 1968 the Nevada legislature rejected a new antipeyote law (OCS-39, p. 6) to replace the one repealed in 1955 (OCS-38, fn. 56). The traditional Shoshone groups and the Tribal Councils, organized under the Indian Reorganization Act, although frequently at cross-purposes, combined to lobby in the Nevada legislature in 1968 (OCS-39, p. 6).

As of 1932, as shown in the Survey (OCS-46), also in 1972 according to Rusco (OCS-38, pp. 25-26), protection of Indian water rights is the pressing Nevada Indian problem. The willingness of Nevada lawmakers to disregard Indian water rights for a century is additional evidence of the difficult cultural climate in which the Western Shoshone have lived.

Beginning in the 1930's, a more vigorous and sustained effort was set in motion to try to provide some reservations for the Western Shoshone within their ancestral lands, and thus to comply with the provision of the 1863 treaty promising such reservations. From 1930 to 1940, land was purchased in seven communities for the Indians to provide at least some small protection within their own area. These have since been maintained and in some instances enlarged.

The statement from the BIA publication, Indians at Work (OCS-75, p. 2), for February, 1941, explains why the BIA was anxious to help the Western Shoshone by setting up these reservations:

> The Duckwater Reservation was purchased with funds provided by the Indian Reorganization Act and was proclaimed a reservation on November 13, 1940, for the benefit of the Band of Shoshone Indians residing in the Duckwater Valley in Nevada. The establishment of this reservation and the organization of these Indians represents a phase of a continuing effort of the Indian Office to provide lands and subsistence for the scattered Indians of Nevada. In past years these Indians have lived on the outskirts of the Nevada towns under the most miserable conditions.

In December, 1941, Assistant to the Commissioner of Indian Affairs, Walter V. Woehlke, wrote (OCS-74, p. 15) that the Nevada Indians "had perhaps the lowest per capita income of any Indian group in the United States." These statements in the official publications of BIA indicate the dire need of the Indians and thus explained why the reservations were so greatly needed when they were finally provided.

A special report, unpublished but available in the National Archives, prepared by the Soil Conservation Service in 1937 (OCS-66), leaves no doubt that the reservations made for the Indians, especially the largest one - the South Fork purchase - was in response to the provision of the 1863 treaty were at least in part satisfied. An attempt was made to try to satisfy the conditions of that treaty by the purchases of ranches in the 1930's according to a report by the Soil Conservation Service staff (OCS-66).

By 1953 (OCS-76) Western Shoshone were assigned the following reservations or colonies:

(1) Battle Mountain Colony, 680 acres
(2) Yomba or Reese River Reservation, 4,681 acres
(3) South Fork Reservation, 13,051 acres
(4) Elko Colony, 193 acres
(5) Ely Colony, 10 acres
(6) Ruby Valley Reservation, 1,240 acres
(7) Odgers Ranch Reservation, 1,987 acres
(8) Duckwater Reservation, Nye County, 3,643 acres

(9) Duck Valley Reservation (Owyhee), Idaho and Nevada, 289,827 acres, includes Paiute.

Conclusion

From the beginning of the Indian-White relations in Nevada, the record is very clear that neither the employees of the Bureau of Indian Affairs or the United States Government nor the local citizens or local officials were very much concerned with the welfare of the Indians. Everyone seems to be willing to use the Indians for his own benefit either as low-paid employees, as prostitutes or as purchasers of cheap products and poor whiskey, according to a number of accounts. The opportunity to exploit the Indians seems to have been almost unchecked by either local officials or government officials. Except for those Indians on the reservation and the Western Shoshone on the reservations even there were not fully protected from the people who were anxious and willing to take advantage of their position of authority to steal from the Indians or to do favors for their friends.

In the case of federal government officials, the rules and regulations promulgated for the Indians appeared to have been made without regard for Indian wishes or without regard for the provisions made in the Doty Treaty of 1863. The Indians had requested reservations within their own land. Almost no official seemed to take that demand seriously. Immediately the local farmer, Levi Gheen, went beyond the territory of the Western Shoshone to find a reservation which he thought was a good reservation. Even such special Commissioners as Powell and Ingalls appeared to disregard completely the provisions of the Doty Treaty and recommend that the Western Shoshone be resettled on the Fort Hall Reservation in Idaho. This same recommendation was repeated years later, so that the question of treating the Indians as they had been promised or considering the wishes of the Indians was usually not considered important for those who had BIA management. Practicality, saving money, not spending anything that was not necessary and particularly, not to regard the Indians' own habits and wishes seem to have determined policies which failed, because the Indians were in fact strong in their own beliefs and elected to stay in their own homeland.

The local population seems to have carried on the very crude and cruel culture pattern of miners and cowboys to a marked degree. The whole culture pattern of the State of Nevada militated against

kind and considerate policy for the Indians. Of course, the Nevada citizens were not easy on themselves, and life in Nevada was harsh for everyone. The Indians had to adjust as they could, but we find almost nothing in the historic record which indicates that the citizens of Nevada paid any regard for the personal comfort or for the welfare of the Indians until very recent years, so that the fate of the Indians such as the Western Shoshone, since the federal government did not live up to its treaty commitments, was a sad one. They have suffered and do suffer great discomfort and privation. For decades nothing was done to help the Western Shoshone until some slight compensation was made for them in their own territory in the 1930's and 1940's.

NOTES

[1] "OCS" references are to the exhibits compiled by me which have been filed with the Indian Claims Commission as part of the offsets phase of Docket 326-K. This report was submitted as Petitioners Exhibit No. 1. September 27, 1973. Washington, D.C.

LIST OF EXHIBITS

Submitted to the Indian Claims Commission in Support of the Report of Omer C. Stewart, Docket 326-K.

R-CIA = Report of the Commissioner of Indian Affairs.

R-SI = Report of the Secretary of Interior.

OCS-1A	R-CIA 1872, Title page, pp. 59, 68, 69, 283-287.
OCS-1B	R-CIA 1873, pp. 157-159, 244, 245, 253-257, 338-339, 387-388.
OCS-1C	R-CIA 1874, Title page, pp. 53, 54, 106, 107.
OCS-1D	R-CIA 1875, Title page, pp. 89, 90, 174, 343.
OCS-1E	R-CIA 1876, Title page, pp. 116-118, 216-217.
OCS-1F	R-CIA 1877, pp. 1, 151-153, 312-313.
OCS-1G	R-CIA 1878, Title page, pp. 104-106, 176, 177, 261.
OCS-1H	R-CIA 1879, pp. 110, pp. 110-112, 216, 223, 236, 237.
OCS-1I	R-CIA 1880, pp. 127-128, 248-249.
OCS-1J	R-CIA 1881, pp. 130-134, 282-283.
OCS-1K	R-CIA 1882, pp. 117-123, 338-339.
OCS-1L	R-CIA 1883, pp. 110-117, 276, 277, 296, 297.
OCS-2	R-CIA 1884, pp. 126-127, 294-295, 312-313.
OCS-3	R-CIA 1887, pp. 164-167, 358-359, 388-389.
OCS-4	57th R-CIA 1888, pp. 182-187, 420-421, 438-439.
OCS-5	58th R-CIA 1889, pp. 250-253, 506-507, 522-523.
OCS-6	59th R-CIA 1890, pp. 150-153, 540-545, 548-549.
OCS-7	60th R-CIA 1891, pp. 298-305.
OCS-8	60th R-CIA 1891, Part 2, pp. 78-79, 98-99.
OCS-9	61st R-CIA 1892, pp. 324-329, 790-791, 808-809.
OCS-10	R-SI 1896, Vol. II, pp. 210-213, 570-571, 586-587.
OCS-11	R-SI 1897, pp. 206-207, 526-527, 542-543.
OCS-12	R-SI for Fisc. Yr. ended June 30, 1898, Indian Affairs, pp. 202-205, 604-605, 620-621.
OCS-13	R-SI for Fisc. Yr. ended June 30, 1899, Report of the Commissioner of Indian Affairs, Part 1, pp. 570-571, 588-589, 240-243.
OCS-14	R-SI for Fisc. Yr. ended June 30, 1900, Indian Affairs, Report of the Commissioner and Append., pp. 282-285, 644-645, 664-665.
OCS-15	R-SI for Fisc. Yr. ended June 30, 1902, Indian Affairs, Part 1, Rpt. of Comm. & Appendixes, pp. 78-79, 248-251, 586-587, 638-639, 656-657.
OCS-16	R-SI for Fisc. Yr. ended June 30, 1903, Indian Affairs, Part 1, Rpt. of Comm. & Appendixes, pp. 486-487, 514, 515, 534-535.

OCS-17 R-SI for Fisc. Yr. ended June 30, 1904, Indian Affairs, Part 1, Rpt. of Comm. & Appendixes, pp. 248-249, 602-603, 622-623.

OCS-18 R-CIA 1917, pp. 96-97.

OCS-19 R-CIA 1918, pp. 104-105, 114-115.

OCS-20 R-CIA 1919, pp. 100-101.

OCS-21 R-CIA 1920, pp. 82-83, 92-93.

OCS-22 R-CIA 1921, pp. 44-45, 64-65.

OCS-23 R-CIA 1923, pp. 44-45.

OCS-24 R-CIA 1924, pp. 30-33, 48, 49.

OCS-25 R-CIA 1925, pp. 34-35, 52-53.

OCS-26 R-CIA 1926, pp. 34-35, 52-53.

OCS-27 R-SI 1927, pp. 214-215, 234-235.

OCS-28 R-SI 1928, pp. 260-263, 268-269.

OCS-29 Report of the Board of Indian Commissioners 1932, pp. 12, 13.

OCS-30 R-SI 1933, pp. 208-209.

OCS-31 R-SI 1935, pp. 62-63.

OCS-32 R-SI 1936, pp. 70-71.

OCS-33 R-CIA 1940, pp. 2, 4, 5, 10, 11, 21, 24, 27, 28, 30, 36, 48, 49, 60, 61, 64-71.

OCS-34 Indian Population in Continental U.S. and Alaska Supplement to the R-CIA January 1, 1941, pp. 1, 6, 7.

OCS-35 R-CIA 1946, pp. 364-367.

OCS-36 R-CIA 1947, pp. 350-353.

OCS-37 The History of Nevada. Edited by Sam P. Davis. Vol. 1. Illustrated 1913, p. 105.

OCS-38 The Status of Indians in Nevada Law. Elmer R. Rusco, 1972, 32 pages.

OCS-39 Channels of Political Expression Among the Western Shoshone-Goshute of Nevada. By Richard O. Clemmer, 1972, 12 pages.

OCS-40 R-CIA 1885, pp. 148-149, 346-347, 364-365, 376-377.

OCS-41 R-CIA 1886, pp. 402-403, 444-445, 432-433, 420-421, 196-199.

OCS-42 R-CIA 1893, pp. 212-213.

OCS-43 R-CIA 1894, pp. 202-205, 466-467, 574-575.

OCS-44 R-SI 1897, Vol. II, pp. 526-527, 542-543.

OCS-45 Statistical Supplement to the R-CIA 1939, pp. 10, 18.

OCS-46 Survey of Conditions of the Indians in the United States. Hearing before a Subcommittee of the Committee of Indian Affairs U.S. Senate 72nd Congress, 1st Session, Part 28. Nevada, pp. I-IV, 14807, 15035.

OCS-51 Culture Element Distributions: XIII Nevada Shoshoni. By Julian Steward, Anthropological Records, Vol. 4, No. 2, 1941, pp. 210-215, 254.

OSC-52 Contributions Toward a Flora of Nevada. No. 33, Medicinal Uses of Plants by Indian Tribes of Nevada. By P. Train, J.R. Henrichs, W.A. Archer, Part 1 - (Pages 1-61). Dec. 1, 1941, pp. 13-15.

OCS-53 Acculturation in 7 American Indian Tribes. Edited by Ralph Linton, Chapter 2 - The White Knife Shoshoni of Nevada, by Jack S. Harris, pp. 39, 72-95, 108-119.

OCS-54 The Washoe, Paiute and Shoshone Indians of Nevada. State of Nevada Dept. of Education, Carson City, 1964, Title page, pp. 16, 18-24, 36, 55.

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WASHO INTERNAL DIVERSITY AND EXTERNAL RELATIONS

by

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I would like to discuss aspects of two different, but not unrelated, topics concerning the Washo language: its internal dialectal divisions and its external relations, primarily lexical, with surrounding languages. A report on the latter topic, consisting of lists of words thought to have been borrowed from neighboring groups, was included in my paper from the Great Basin Anthropological Conference of ten years ago (Jacobsen 1966:127-128), but since then the increased availability of lexical information on the nearby languages, both Penutian Miwok and Maidu to the west and the Numic branch of Uto-Aztecan to the east, has made it possible to further expand this study.[1]

Washo, a member of the far-flung Hokan family of languages which has its center of gravity to the west in California, is geographically separated from any related languages, and surrounded by unrelated ones. As a consequence, the Washo have a vivid sense of their linguistic and ethnic distinctiveness, in contra-distinction to the limited amount of linguistic self-consciousness that has been described for more central areas of the Great Basin.[2]

Internal Diversity

The amount of dialectal variation within Washo is small, and a significant part of what there is can be seen to be recent in origin, due to differing outside influences on different parts of its area, and to differing neologisms formed for newly introduced items.

By way of comparison, it was found in a study by Miller, Tanner, and Foley (1971) of the widespread Shoshoni language, that in a basic word list of 100 words the amount of cognate forms shared by two speakers tended to run around the upper 80's and lower 90's, but ranging from 75 to 97. By contrast, for this same list, the amount of cognates shared by two Washo speakers would probably not drop below 96 and would usually run from 98 to 100.[3] Thus most of the dialectal variations within Washo involve relatively minor differences in the forms of words, rather than a variation between completely different words to express the same concept.

Let us now look at some actual examples of the diversity within Washo, starting with variations in the phonological shape of words. As might be expected, some differences correspond to differences in broad underlying rules, affecting a considerable number of forms, whereas others are more narrowly patterned and turn up in fewer or in isolated forms. The inventory of phonemes seems to be common

to all speakers, and the patterns of phoneme arrangements show only minor differences. There are some differences in the pronunciation of the phonemes, most noticeably in the quality of /e/ and in the degree of fortisness of the glottalized stops. There seems to be a basis in fact for the widespread opinion that the northerners speak more slowly than the others.[4]

Many of the differences between forms involve the occurrence of different vowel phonemes, and a large proportion of these can be accounted for quite neatly by an understanding of the pervasive vowel harmony patterns of Washo. Vowels are primarily divided into two classes: the low back vowels /a o/ vs. the high and front vowels /e i ɨ u/. In what follows I will refer to each of these classes of vowels by its first listed member, the a-class and the e-class. The most common type of synchronic alternation involving vowel harmony is one between the vowels a and e in a large number of prefixes. For an example, we may consider the prefix da- de- indicating a third person possessor of a noun that is not also expressed by a preceding word.[5] The following noun stems have their first vowels stressed, and these are members of the a-class, so the prefix takes on the vowel a in agreement:

dahaŋa 'his mouth'
datʼóʔo 'his throat'.

These nouns have stressed vowels of the e-class instead, so this prefix has the vowel e:

dekʼétep 'his bottle'
depʼísew 'his ear'
debɨkʼí 'his grandmother's sister'
degúʔu 'his mother's mother'

The following examples illustrate a neatly patterned and also sharply geographically delimited dialectal difference. Although all speakers agree in the membership of the two classes of vowels, they differ in the location of the conditioning vowel in a word, in cases where the vowel following the prefix is not accented. These words contain the Imperative prefix ga- ge-:[6]

geš̌uʔmáwɨt / gaš̌uʔmáwɨt 'throw it over!'
gepʼidáˑš̌uk / gapʼidáˑš̌uk 'come in (pl.)!'

In the southerly dialect, whose forms are given to the left of the slash, the vowel of the prefix agrees with the immediately following

vowel regardless of stress placement; hence in these forms this vowel is e, agreeing with the following u or i of the e-class. But in the other dialects the vowel of the prefix is conditioned by the following stressed vowel, which need not be the immediately following one. So the forms in question, to the right of the slash, have the prefix vowel a, agreeing with the following a, in spite of the intervening vowel of the e-class. The geographical boundary for this difference can be thought of as coinciding roughly with the California-Nevada state line as it runs southeastward from Lake Tahoe, separating locations such as Woodfords to the south from the Carson Valley and locations farther north.

The tendency to have all vowels of a word belong to the same vowel harmony class can be seen to have taken hold in some words borrowed from other Indian languages, so as to bring about a replacement of some of the original vowels. A few such examples are the following. In damá·li- 'to trade, exchange', borrowed from a Miwok form represented by Central Sierra Miwok temá·l- 'to trade',[7] the first vowel has been changed from e to a to agree with the following a. In díye 'to name', taken from Numic niya,[8] there has been a change of the final vowel in the opposite direction, from a to e, to agree with the preceding i, a member of the e-class. And in sewít 'porcupine', also from Numic, but specifically Northern Paiute cagʷidi,[9] an a has been changed to an e to agree with a following i, also in the e-class; this vowel is stressed in Paiute and may formerly have been so in Washo. That this kind of change is not inevitable is shown by the following examples, borrowed from the same sources: hilí·ža 'mountain lion', from a Miwok form such as Central Sierra Miwok hí·liča-; wátžiha / wášžiha 'fox sp.', from Northern Paiute waci?a,[10] and ?á·ni 'ant sp.', from Numic ani.[11] These words all contain combinations of i's and a's, members of two different classes, yet the a's remain, not having been changed to e's.[12]

One source of dialectal differences with respect to the vowels of certain words can be seen to be that this kind of replacement for vowel harmony has taken place in only part of the Washo area, leaving the word in this respect more like the original model in the remainder of the area. It is a striking fact that for this type of variation it is the northerly form to which the vowel-harmonizing change has applied, and hence the southerly one that is left more like that of the donor language in this respect. The borderline for this difference is not the same from word to word, but it generally runs farther north than the one we have just described, leaving the Carson Valley dwellers in agreement with the more southerly ones.

The variants shown hereafter are arranged with the geographically southerly form first and the northerly form last:

gó·be? / gó·ba? 'coffee'
mónde? / mónda? 'to play cards'
mú·la? / mú·le? 'mule'
né·ga? / né·ge? 'Negro'

The first two words show a replacement of posttonic e by a to agree with the o of the a-class, whereas the last two show the opposite replacement of posttonic a by e to agree with a ú or é, of the e-class. The words for 'to play cards' and 'mule' are ultimately from Spanish.[13]

Another pair of vowels that alternate synchronically are o and u. In ?uhó·š / ?ohó·š 'hat' the northerly variant apparently shows a change of the u to o to coincide with the following stressed vowel. The historical priority of the u is made more likely if a suggested etymology is accepted which would equate this with the w of the prefix wh^{u}-, used to describe head hair; the stem present would be á·š 'in, into', and thus the word would have originally meant literally something like 'putting the hair in'.[14] An apparently opposite, and synchronically unparalleled, change of o to u to agree with a following i of the same e-class of which u is a member, occurs in ?móčim / ?múčim 'grass'. It will be noted that for these vowel changes, just as for those involving a and e, it is the more northerly dialect that is the innovative one.

A different kind of change of vowels is rounding, as of a to o, within a single vowel-harmony class. There are two kinds of environments for this. The following two examples show it occurring immediately before w:

šówlam / šáwlam 'to be a girl'[15]
ŋówa / ŋáwa earth, ground'

This kind of w-induced rounding takes place only within the southernmost dialect, and in some cases only for some of those speakers. The other environment for a change of a to o involves harmonizing with a following stressed o. This is seen in these examples:

?oŋoho· / ?aŋaho· 'dove'
nonómba / nanómba / nanóm?ba 'sugar-pine sugar'
pa?gó·tomhu / po?gó·tomhu / pa?gó·timhu 'grasshopper'

This change is more irregularly distributed, involving certain speakers of both the southernmost and the northernmost dialects in different words.

A following w also seems to condition a change of i to u, within the other vowel-harmony class, in the prefix ćuw- / ćiw- 'to hang', and of a to u, cutting across the vowel-harmony classes, in ?uwá·ćˀi / ?awá·ćˀi 'minnow'. These changes, like the preceding w-induced ones, occur in the southernmost dialect.

A change occurring only for some northern speakers, on the other hand, is that of u to ɨ before an m in the same syllable. In the word for 'bat', begumdálŋi? / bagumdálŋi? / bagɨmdálŋi?, this combines with the previously met variation between a and e in prefixes to give three different forms.[16]

A more restricted type of difference affects a single grammatical affix. An intransitivizing verb prefix has the presumably more archaic forms ?am- ?em-, varying according to normal vowel harmony, in the northern dialect, but the single form ?um- in the other areas, where it is homophonous with the preconsonantal allomorph of the second person pronominal prefix. This gives rise to variant forms such as:

?umdáćawi / ?amdáćawi 'she's pounding into flour'
?umsebélegi / ?emsebélegi 'he's blowing'[17]

Dialectal differences may involve consonants as well as vowels. A change occurring in the southern dialect, with the same geographical boundary as the variation between a and e in prefixes, is the loss of a k before prefix- or stem-initial voiceless resonants, M N̥ L W Y, even when the vowel of a prefix precedes. The following words illustrate this before stem-initial M:

deMílu / dekMílu 'his male friend'
DaMá·s / DakMá·s 'his face'

The dialects all agree in losing this consonant either initially or after another consonant. A further difference when the second person prefix ?um- is present as to whether it is this k or the m at the end of the prefix that is lost leads to three forms of the word for 'your face': ?uMá·š / ?umMá·š / ?ukMá·š. The southernmost dialect favors the first of these forms, but with the second form noted for some in careful speech; the last two forms come from

different more northerly speakers who retain the postvocalic k.[18]

These items show differences with respect to stem-final ?:

mésu / mésu? 'antler, horn'
čápu / čápu? 'ashes'

For the great majority of stems all dialects agree in either having or not having a final ?, but there are several for which this sort of difference has been recorded, with an irregular geographical distribution.

The following items show another difference involving this same consonant:

yé·m / yé?em 'to swim'
dewesḱi·m / dewesḱi?im 'wind'

One variant has a pair of identical vowels separated by a ?, where the other has a long vowel. This difference is again geographically irregular, and not the same as between these two words; here again the great majority of words agree in this respect in all dialects.

A dialectal difference between word-initial k and its voiced counterpart g is illustrated by these words:

kuḱu· / guḱu· 'burrowing owl'
kogidésmi? / gogidésmi? 'death camas'

This sort of difference, occurring also in a few other words, seems to be primarily a symptom that the words are borrowed, in the case of the forms shown, from Numic.

The last purely phonological difference that will be mentioned concerns the presence or absence of h before word-final u and after k (and also p), as exemplified by these variants:

?á?waku / ?á?wakhu 'cui-ui sucker'
čido·doku / čido·dokhu 'robin'

This seems to arise largely from equating a final voiceless vowel of Numic with a washo ending -hu that is present on certain plant and animal names. The first of these words, referring to a fish characteristic of Pyramid Lake, is a clear borrowing from Northern Paiute.[19]

A few differences between dialects are purely lexical, involving completely unrelated words for the same concept, two examples of which may be mentioned. For 'mosquito' the southern dialect and some Carson Valley dwellers use pú·t'e?, whereas others in the Valley and to the north use the forms damuk'áyk'ay or da?muk'áyk'ay, which mean literally 'having a long or sharp nose or beak'.[20] For most of these latter speakers the word pú·t'e? means 'fly' instead, whereas the southern dialect has a different word for 'fly'.[21] For 'husband' the common word in the southern and central areas is bumé·li?, but in the north it is ?mé·s.[22] The opposite word is present in most cases with a specialized meaning such as 'boy-friend' or 'lover'. Differences like this are infrequent for items that were probably present aboriginally.

A couple of instances wherein dialectal differences can be seen to result from different outside influences in different parts of the area may also be illustrated. The word for 'cow' in the south is bá·ga?, ultimately from Spanish vaca, probably coming through Miwok or Nisenan, but in the north it is gúsu, a word borrowed from Northern Paiute, and formerly also, or instead, meant 'buffalo'. This same word has also been borrowed, incidentally, by the Hokan Achumawi farther to the north.[23] Rather similarly, for 'horse' a word coming from Spanish caballo, with varying final vowels, gawá·yi? / gawá·yu? / gawá·yi?, is now used in most of the area, but in the north the word súku?, which also means 'dog' throughout the area, is used. This was formerly more widespread in the meaning 'horse', and is apparently a borrowing from Nisenan.[24] Besides these there exists an archaic word which is literally descriptive of the shape of the hoof.

Another kind of variation found for introduced items is one wherein an older term exists beside a newer borrowing from English. For the following four items an obsolescent term taken ultimately from Spanish is present beside a term introduced more recently from English:

bilá·da? / mó·ni? 'money'
?ó·do? / gú·l 'gold'
biho·lis / biho·li? / bíniši? 'beans'
wudé·gu? / wedé·gu? / wedé·ge? / ši·p 'sheep'[25]

For 'car' there is an indigenous term pú·lul, formerly meaning 'hoop' and then 'wagon', which competes with the term ?odomobíl, borrowed from English.

Other variations concern neologisms for newly introduced items, which sometimes have been made up differently in different areas. One such example is the word for 'chair', ?itge·gél / ?itkulaŋa?. The former form means literally 'for sitting', the latter, 'for being upon'.

External Relations

Turning now to the direct consideration of Washo words borrowed from surrounding Indian languages, one interesting observation that can be made is that several of them seem to imply that there has been a long period of contact between Washo and the neighboring language families, as they reflect archaic forms in cases where the present-day contiguous languages show either variant or completely unrelated forms. We may consider first some forms from the Penutian languages to the west. The word for 'spider', č'i·k'i, is almost identical to that of Konkow or Northwestern Maidu.[26] The form is characteristic of Maiduan, but anomalous for Washo, with its stressed i and intervocalic voiceless stop k; hence it is probably borrowed into Washo. However, Konkow is not geographically contiguous to Washo, and the neighboring languages of the family, Maidu proper or Northeastern Maidu and Nisenan or Southern Maidu, have completely different forms for 'spider', respectively maka'ti and ~~pissi~~. Hence the conclusion is drawn that at least one of these other languages formerly had a similar form, which has subsequently been replaced.[27]

The word for 'lizard' in Washo is piteli?. This is strikingly similar to those of Lake and Bodega Miwok, peteeli and pet(t)eeli.[28] But these are located on or near the Pacific coast, whereas the Sierra Miwok dialects have forms similar to Central Sierra Miwok pič·ak·a-. The Maiduan languages also all have forms similar to Nisenan pitcaka.[29] It seems that Sierra Miwok has borrowed these forms from Maiduan, substituting its plain stops for the glottalized ones of Maiduan, but the borrowing into Washo must hark back to a time before this replacement.[30]

The word for 'bead' is mak'aw. This is a trade item, of course, and similar words run north and south in the Sierras, even turning up in Western Mono. Some characteristic forms are Konkow hówoko 'beads', Nisenan howoko 'wampum beads', Maidu wókkolò 'small sea shell punched with a hole, acquired by trading', and Northern Yana waku 'shell beads'. The Washo form is not identical to those of other languages, but seems in particular to attest to an old glottalized k that is otherwise found only in Konkow.[31]

Evidence can also be found for prolonged contact between Washo and the Numic languages to the east. The word for 'medicine', mú·čuk, shows the first syllable that we see in Southern Paiute musutuk^{w}i, but the ordering of t before s that is shown instead by Kawaiisu matasuk^{w}i and other languages.[32] However, the forms in geographically closer languages, such as Northern Paiute natísua and Shoshoni natahsu, are less similar to the Washo, especially in having an initial syllable na-.[33] Thus Washo must have taken this word, not from Northern Paiute, but from a more archaic form of Numic with which it was formerly in contact.

The Washo word for 'sego lily', kókši?, may come from a Numic form similar to that seen in Kawaiisu kogosi-vi 'root of paguusi'.[34] Starting from the latter, elision of the medial -o- with automatic change of syllable-final g to k would pretty well give the Washo form. Such an original form might provide a missing link between seemingly disparate Numic forms such as Northern Paiute kóogi, sigó 'sego lily', pasógobi 'death camas', Shoshoni sigoo 'sego lily', pasigoo 'camas'; these would reflect different reductions and rearrangements of its syllables.[35] The first two syllables (at least) of the Washo word for 'death camas', kogidésmi? / gogidésmi?, are apparently a more recent borrowing from Northern Paiute.[36] In cases like these, the evidence of Washo may be at least a minor link in the chain of evidence leading to unraveling the histories of neighboring language families.[37]

A few words may be discussed which will illustrate some of the problems that must be faced in searching for this kind of borrowing, especially changes of meaning. The word for 'stocking, sock', wé·čip, seems to come from a Numic passive participle, meaning 'that which is tied around', referring doubtless originally to leggings. In Southern Paiute as described by Sapir we find wíča-pi 'tied around, band, ribbon'.[38] Powell recorded Tong-a-wich-up 'leggins', where the first two syllables mean 'knee'; hence 'leggins' is 'knee wrapping'.[39] Compare also the stems Kawaiisu wíči- 'to wrap up' and Northern Paiute wica- 'wrapping, winding'. Strikingly similar also is Tübatulabal wahcipi·-l 'the moccasin'.[40] There does exist, however, an alternative possibility in a similar form found in localized dialects of Northern Paiute meaning 'sagebrush' or 'sagebrush bark', which was the material for Washo stockings.[41]

The word for 'sack, bag, pocket', tóšap, may be a borrowing from a Northern Paiute word for 'stocking', tas·ópa, made up from the ta'- prefix for things pertaining to the feet added to a postbase -sópa 'sack'.[42] A comparable semantic relationship between footwear and

flexible container is probably to be observed in Northern Paiute as between mago 'sack' and moko 'shoe' and in the Shoshoni diminutive formation mogoci 'sack, bag'.[43]

Less certain, but probable in the light of the borrowing of several items of clothing for the feet and legs from Numic, is that of wi·gis 'trousers'. This is probably from a Northern Paiute compound word whose second member is kus·a 'breechclout; trousers'. The first part might be wiza 'calf', giving *wizakus·a, parallel to attested Southern Paiute wizaxuš·a '(buckskin) leggings', or perhaps wiga 'woven rabbit-skin blanket', originally 'twined garment from rabbit-skin' (in modern Bannock, 'clothing of various types, bedding'), giving *wigakus·a.[44]

The word for 'knife', ta?wi?, seems to have been borrowed from another Northern Paiute compound noun, apparently attested, for example, in a manuscript of Stephen Powers as To-hag-weh 'a flint knife set in a wooden handle'.[45] This clearly renders tohakʷihi (southern dialect tohagʷ·ihi) meaning literally 'white knife', a compound of toha 'white' and wihi 'knife'. This was the label for a kind of knife made of white chalcedony, which was highly prized and traded from group to group in the Great Basin.[46]

A different kind of problem is illustrated by the words for 'hand game': hina·ya 'women's hand game' and hinayawgi 'men's hand game', which show resemblances to those of all the neighboring groups. In particular, the beginning of the word looks like the Penutian forms to the west, such as Nisenan helay 'hand game', he·lay 'to gamble', Maidu helay 'to gamble', Central Sierra Miwok hino·w- 'to gamble'. The end, on the other hand, looks like Numic forms to the east: Northern Paiute nayakʷi (southern dialect nayagʷ·i) Shoshoni naaiyawi 'to play the hand game'. Hence, although diffusion seems to have taken place in these words, which of course often imply a coming together of members of different tribes, its trajectory has not yet been established.

By way of summary, we may group the better-established Washo borrowings from other Indian languages into broad semantic categories, to see what general indications they can give us of cultural and ecological relations.

From Miwokan come words for some insects that were not common in Washo territory, due to the altitude and soil conditions: gi·gišiʔ 'flea' and ge·šuʔ 'angleworm'.[47] The reason is less clear for the above-mentioned borrowing of ci·ki 'spider' from Maiduan. From

Numic was taken ?á·ni 'ant sp.'; in Northern Paiute ani refers to a large black ant that was commonly eaten and was considered a treat to be offered to guests.[48] A word for a variety of the same insect was also borrowed from Miwokan: desi·nayi? 'ant sp.'.[49] Also from Miwokan may have come poorly attested lu?luma or luluma? 'brown worm or bug sp. (perhaps caterpillar)'.[50]

A few words for reptiles seem to come from Miwokan to the west. The early borrowing of píteli? 'lizard' has already been suggested. The word for 'turtle', k'awánada? (and variants k'awánadi?, k'awánadu?, gawánadi) apparently comes from this source; the creature is found primarily in the foothills and valley west of Washo territory;[51] similar words spread west and north across California, occurring in Maiduan, Wintun, and Pomo.[52] Also from Miwokan and reflecting a typically more westerly and lower altitude distribution is apparently mušgulhu 'water snake'.[53] It is conceivable that gó·t'a? 'frog' might also be borrowed from the west.[54]

A couple of fish names, on the other hand, seem to have been taken from Numic, which is not surprising when it is remembered that it is only to the east that sizeable rivers cross the boundary between the Washo and another group. These are ?á?waku / ?á?wakhu 'cui-ui sucker' and bákwanhu 'Tahoe sucker'.[55]

The determination of borrowing of words for birds is especially difficult, as so many of them are clearly onomatopoetic. Those that are likely to be borrowed in Washo mostly come from the Penutian languages to the west (i.e., from the direction of the forest rather than the desert), and refer in several cases to species primarily located west of the Sierras. Probably from Miwokan are balátdaday? 'woodpecker sp.'[56] and č'ú·šim 'buzzard sp.',[57] and from Maiduan, ?á?a 'crow',[58] mákmak / mákmakhu 'woodpecker sp.',[59] hú·šim 'buzzard',[60] č'ikč'iku / č'ikč'ikhu 'pelican'. But the word kukú· / gukú· for 'burrowing owl', a desert dweller, seemingly comes from the Numic to the east.[61] Forms similar to lá?lak 'goose sp.' occur in Maiduan and Miwokan, as well as in other Californian groups farther west and north; recent work by Robert L. Oswalt makes it likely that these are primarily imitative of the call of a particular kind of goose, rather than borrowings.[62]

Words for two large and dangerous mammals have also been obtained from the west: hilí·za 'mountain lion' from Miwok,[63] and mí?de / mí·?de 'black bear' from Maidu.[64] Other words for smaller mammals come from all the surrounding groups. From Miwok come délem 'mole, gopher',[65] and perhaps pélew 'jackrabbit';[66] from Maidu, probably tulúlu 'small squirrel sp.'[67] Several are clearly from Numic:

bá·muš 'muskrat',[68] séwɨt 'porcupine',[69] and wátʒiha / wáʃiha 'red fox';[70] borrowing of hó?la? 'badger' from this source also seems possible.[71] Among domesticated animals, súku? 'dog', formerly and northern dialect also 'horse', seems to come from Nisenan, but similar forms are found also in Miwok and other languages to the west.[72] The northern dialect word for 'cow', formerly also, or instead, 'buffalo', gúsu, comes, as we have seen, from Numic, where it may also in part be a borrowing from group to group.[73]

Turning to plants, there are several borrowings from Penutian languages. Words for certain kinds of oaks come from Miwok to the southwest: wílisi? 'oak sp.'[74] and šagá·ša? 'oak sp.'[75] Oaks are found only on the western slopes of the Sierra, where acorns are an important food and one that was acquired on expeditions by the Washo.[76] Another clear borrowing from Miwokan is ?eyéye? 'green manzanita'.[77] Less certain possible borrowings may be dú·ni? 'golden brodiaea' (a medicinal root)[78] and héli?, an unidentified medicinal plant sp.[79] From Maiduan apparently comes tó·ni? / tú·ni? / tó·ni / dú·ni? 'hard-shelled nut sp. from California'.[80] A larger number of words for roots, seeds, cacti, brush, grass, and trees come from Numic, most of which are characteristic of a desert or marsh environment. These include kókši? 'sego lily',[81] kogidésmi? / gogidésmi? 'death camas',[82] ná·bu 'prickly pear cactus',[83] sá·bu 'seeds of cat-tail tule',[84] wayámhu 'seed sp.',[85] ċipápa 'brush sp.',[86] šó?ŋi? 'grass sp.',[87] šáwa? 'white fir',[88] also the all-purpose medicine dó·ċa? 'Indian balsam'[89] and the generic word for 'medicine' mú·ċuk. There is also a clear borrowing of a word for 'prickly poppy' attested in earlier recordings of Washo.[90]

Some other borrowed words imply trade and cultural influence, including implements and wearing apparel. From Miwok come damá·lɨ 'to trade, exchange';[91] also šu?mé·li? 'snowshoe' somewhat resembles a Miwok term.[92] From Maiduan come the trade item máǩaw 'bead' and words relating to food gathering and preparation: pɨ́?lɨ 'to fish with hook and line'[93] and mólmol 'to boil'.[94] Words implying trade with the Numic-speaking peoples include ?uŋá·bi 'salt'[95] and tá?wi? 'knife'. From this source come also several words applying to wearing apparel, especially of the lower part of the body: mókgo 'shoe',[96] wé·ċɨp 'stocking, sock', wí·gis 'trousers', and tóšap 'sack, bag, pocket' ('stocking'). Apparent borrowing from Numic of šála? 'pitch' probably relates to its use in artifacts.[97] Also Washo mudá·l 'close weave tray basket' somewhat resembles a Northern Paiute word.[98]

Of a more abstract nature are the games hiná·ya 'women's hand game', hinayáwgi 'men's hand game', of uncertain origin, and from Numic díye 'to name',[99] zá?aphu / zá?bu 'spirit',[100] wé·?muhu, name of a monster in a legend,[101] and, from Maidu, bá·nu, a polite term for 'penis'.[102]

Names of peoples that seem to have been borrowed from other groups include, from Maidu, kómbom / kóm?bom 'Yana',[103] from Numic, dabó?o / (archaic) dabibó?o 'white man',[104] and probably also šišá·wi? / sišá·wi? 'Achumawi', dá·guni? 'Pit River Indians (?)', and a man's name banáyk, from a word for 'Bannock'.[105]

The study of this sort of material is still in a pioneering stage, as the historical linguistics of the several language families in question -- Hokan, Penutian, and Uto-Aztecan -- is not well developed. It is hoped that the examples discussed will suggest that the study of language history has its place to play beside other disciplines, such as archaeology, in elucidating the history of the Washo and their relationships with neighboring groups.

NOTES

[1] I am indebted to Catherine S. Fowler, Sven Liljeblad, and Michael J. P. Nichols for extensive data and helpful consultations regarding the Numic languages. My work on Washo has been supported by the Survey of California Indian Languages, Department of Linguistics, University of California, Berkeley, and by the Desert Research Institute, University of Nevada. An important source of information that was consulted on Numic terminology for flora and fauna is Fowler 1972a, but I have largely limited my references herein to the more accessible although less full reports on this work found in Fowler and Leland 1967 and Fowler 1972b.

[2] Cf. Miller 1970:32-34, on the "oneness of language" attitude of the Western Shoshoni.

[3] This list has not been administered in a systematic way to Washo informants; my estimate is based on the extent of known variants for the items on it.

[4] Also mentioned by Freed (1960:350).

[5] These are the preconsonantal allomorphs of this prefix; it has the shape t- before a vowel.

[6] Again, preconsonantal allomorph; the prevocalic shape is g^{e}-, where the raised vowel symbol indicates a property of changing following i to e.

[7] Central Sierra Miwok forms are from Freeland and Broadbent 1960.

[8] The word is attested in all three branches of Numic. Northern Paiute has nía 'to call (tr.)', from which is formed nanían·a 'naming', lit. 'being called' (Sven Liljeblad), with relatively recent loss of *-y- as compared with Mono niya 'to name, call (tr.)', with derived naniyahna 'name'. For a possible Washo change of *n- to d-, compare the first person prefix preconsonantal allomorph di-, perhaps from *ni- (note prevocalic allomorph l^{e}-). Mono forms are from Lamb 1957. In certain modern transcriptions of Penutian and Numic languages, j of the source has been replaced by y, and y by ɨ. Modern transcriptions of Numic languages (except Mono) are normalized so as to show the contrast between medial

stop series in the pattern of d/t, rather than t/tt or t/'t. The southern dialect of Northern Paiute has voiced fortis stops, transcribed as d·, etc. The following raised dot also indicates a non-stop fortis consonant, as n·, s·.

[9] Cf. the recordings cag·wɨ́dɨ 'porcupine' (Fowler and Leland 1967:385) and zagwǘd^{u} 'porcupine' (Surprise Valley; Kelly 1932: 87). See also fn. 69.

[10] Cf. the recordings wací?a 'raccoon' (Fowler and Leland 1967:392) and Wa-Tsí-a 'Fox, small or swift' (Naches recorded by Powell, in Fowler and Fowler, eds., 1971a:211). See also fn. 70. The Washo -ha probably reflects the typically voiceless vowel in Northern Paiute -?a.

[11] Cf. the recordings aní 'ant' (Fowler and Leland 1967:389), a·́ni 'ants' (Surprise Valley; Kelly 1932:91), and Aí-ni 'Ant, large' (Naches recorded by Powell, in Fowler and Fowler, eds., 1971a:212). See also fn. 48.

[12] It is true that in the last two words the a's in the first syllable may have been protected by being stressed; there is no possibility of changing the i's, as this vowel lacks a counterpart in the a-class.

[13] The Spanish source-words are respectively monte, a card game and mula 'mule'. I have not found a borrowing of the former attested in another nearby Indian language, but borrowings of the latter are widespread; cf. Southern Sierra Miwok mu·la-, Nisenan mu·la, Kawaiisu mula?a (also recorded muula?a), Mono muuhna?a, Northern Paiute Mu-ra (Naches recorded by Powell, in Fowler and Fowler, eds., 1971a:211), all meaning 'mule'. Cf. also Bright 1960: 220, sec. 6.1. Southern Sierra Miwok forms are from Broadbent 1964, Nisenan from Uldall and Shipley 1966, Kawaiisu from Zigmond 1972. In Sierra Miwok the subject case suffix is -?. The word for 'coffee' is probably borrowed from English coffee, not from Spanish cafe, in spite of the greater similarity of the final vowel to that of the Spanish form. Adjacent languages to the west have also borrowed this word from English rather than from Spanish: Southern Sierra Miwok ko·fi-, Nisenan ko·pi 'coffee'.

[14] The morphophoneme ^{u} coalesces with following a to give o. For the alternation ?u- ~ w-, cf. diwhó·š 'my hat'. Note the compelling comparison of this prefix to words in other Hokan languages for 'head' or 'hair, head' in Gursky 1974:193, s.v. HEAD (3).

[15] From this verb is derived the noun šówlamhu / šáwlamhu 'girl', with a non-productive suffix -hu. Michael Nichols suggests the possibility that this word might be borrowed from a Numic form like Northern Paiute siádimi 'girl', which is formed from sia' 'to grow up' with an active participle suffix -di and an old plural suffix -mi (sia' conceivably might come from *siwa). If so, the Washo verb would be a back-formation from the noun.

[16] Michael Nichols has drawn my attention to the similarity of this word to Northern Paiute pigáhana?a 'bat'. (Cf. also Fowler and Leland 1967:392 for the form.) It seems possible that the Washo word might represent to some extent a folk etymology based on a borrowing of this or a similar Numic form. The Washo word seems partly meaningful: the part -álŋi? would mean 'having wings', formed from áln 'arm, wing', but the prefixal material seems irregular, although there are prefixes of the shapes ba- be- and gum- / gim-.

[17] Thus a form like ?umsebélegi could also mean 'you are blowing it'. When the second person prefix precedes this intransitivizing prefix, they contact to mim-, as in mimsebélegi 'you are blowing'. 'He's blowing it' (transitive, without separately expressed object) would be gesebélegi. Thus the potential ambiguity is slight; it could only occur in the absence of any indication as to the person of the subject and of an overtly expressed object.

[18] It is regular to lose m, as in ?um-, before m and w, as well as M. In the southernmost dialect these stems would begin synchronically with M-, as the k- is never heard. Or, if the k is regarded as present, so as to have a uniform base form for all dialects, its loss would precede that of m. The difference between the last two forms for the northerly speakers would correspond to a slight difference in the rule for loss of m, starting from *-mkM-; this rule would precede that for loss of k. In the second form (with -mM-), the k would protect the m from loss, and then be lost itself after this consonant. In the third form (with -kM-), the k would not block loss of m before following M, and then becoming postvocalic, would be itself preserved.

[19] For fuller information and lists of relevant words, see Jacobsen 1964, secs. 4.19 and 13.11. Compare the -ha of wátziha / wáziha 'fox sp.' (fn. 10). See also fn. 55.

[20] Michael Nichols has pointed out that the Washo word can be compared to a potential Northern Paiute formation, which is not attested. muká- means 'pointed' (although mucá- is the more common

form) (cf. Miller 1967:54, no. 368). mu- is the Numic root for 'nose, snout; sharp point', and seems to occur also in the word for 'fly', archaic Northern Paiute form muhíbi, which is probably etymologically formed with hibi 'to drink', thus 'nose-drinker' (Sven Liljeblad, after George Herzog) (cf. Miller 1967:33, no. 162a, b). The ending of the word might reflect Northern Paiute -ka?yu 'to have as mentioned'. The Northern Paiute word for 'mosquito' is mopóŋ·i, cognate with Shoshoni mopo (Sven Liljeblad). The Washo stem, apparently reduplicated from áykay, is not otherwise attested.

[21] This word, mecibá·baši?/macibá·baši?, originally applied to the Kutsavi fly of Mono Lake, which meaning it still retains.

[22] Both words are given by Freed (1960:357, nos. 52 and 53), but with no indication of dialectal difference.

[23] Achumawi kujū 'buffalo' (Olmsted 1966:38). See also fn. 73. Borrowings of the Spanish word are widespread in California, including such forms as Nisenan pa·ka 'beef; cattle', Southern Sierra Miwok wa·ka- 'cow', Kawaiisu vaaka?a 'cow'. Cf. also Bright 1960:221, sec. 7.1.

[24] Borrowings of this Spanish word are extremely widespread in California, and have often replaced earlier terms. Reflexes include Central Sierra Miwok kawá·yu-, Southern Sierra Miwok kawa·yu- / kawa·yo-, Nisenan kawa·yu, Maidu kawáyu, Mono qawaayu?u 'horse'. Use of 'dog' to apply to 'horse' is also widespread, including Northern Paiute. Cf. also Bright 1960:215-218, secs. 2.1, 2.3, 2.7. On 'dog' see also fn. 72.

[25] The Spanish source-words are respectively plata 'silver', oro 'gold', frijole(s) 'bean(s)', and borrego, borrega 'lamb'. Two of these are reflected also in Southern Sierra Miwok as pila·ta- 'money' and pih·o·le-, hiho·le- 'beans'; phonologically similar to the former are some reflexes of plato 'plate': Maidu pilá·to 'gold pan', Central Sierra Miwok pilá·tu- 'plate', Southern Sierra Miwok pila·so- 'dish, plate'. The other two words are more widely attested in languages to the west and south, and look to have come to Washo via Maiduan. Words for 'gold' are Nisenan ?o·do, Maidu ?ódo, Southern Sierra Miwok ?o·no-, Mono ?oono?o, and Kawaiisu ?oro?o. Most similar to the Washo word for "sheep' is Nisenan wote·ka 'sheep'; forms attested from Miwokan and Numic diverge more in their first two consonants: Southern Sierra Miwok mune·kas-

'sheep' and Central Sierra Miwok mune·́ kasɨ- 'sheep' resemble each other, as do Southern Sierra Miwok poli·ka- 'sheep; wool; cotton batting; mutton' and Mono pohniihka?a 'sheep'. The Washo -u? presumably corresponds to the Spanish masculine ending -o, and -e? to the feminine -a; some Miwokan forms reflect the plural in -as. Cf. also Bright 1960:224, sec. 10.1. Maidu forms are from Shipley 1963.

[26] The Konkow form is from Ultan 1961.

[27] Cf. Jacobsen n.d.:202, sec. 1.2, fn. 2.

[28] Lake Miwok from Callaghan 1965:108; Bodega Miwok from Callaghan 1970:59.

[29] Cf. Ultan 1964:366, no. 208.

[30] Cf. Jacobsen n.d.:230-231, sec. 7.2, for additional forms and discussion. Note also a different Miwokan form for 'lizard', Broadbent and Callaghan 1960:312.

[31] Konkow from Ultan 1964:368, no. 292; Northern Yana from Sapir and Swadesh 1960:254. Cf. Jacobsen n.d.:224-225, sec. 6.8, for additional forms and discussion. Ultan reconstructs the *k̓ for Proto-Maiduan.

[32] Washo c̓ is a glottalized affricate (t̓s). Southern Paiute form from Fowler 1972a:100, 104, 105, 241, 256.

[33] Shoshoni forms are from Miller 1972. The vowel symbol e of this source has been replaced by ɨ. For the Northern Paiute, cf. Fowler and Leland 1967:387. The Northern Paiute form can perhaps be analyzed as based on a stem sua 'to consume', with prefixes tɨ- (intransitivizing) and na- (passive, etc.) (Sven Liljeblad). Cf. also Nichols 1974:329.

[34] Zigmond's informants differed as to the identification of kogosi-vɨ; one applied this term to the edible root of paguusi (also recorded pogosi) 'Calochortus spp.'. In the latter term the apparent stem guusi (gosi) should probably also be compared.

[35] For the Northern Paiute, cf. Fowler and Leland 1967:384, 388, 397; Fowler 1972a:54, 61, 71, 191. Note also Oregon Northern Paiute pasígo 'sego lily' (Sven Liljeblad).

[36] The piece -dé́smi? is not known to be paralleled in Numic. One notes a similarity to Washo sé́smi? ' soap plant', apparently derived from sé́sm 'to vomit'.

[37] Cf. fn. 52 and 55 for possible similar cases. The apparently lengthy contact between Washo and neighboring languages implied by this sort of evidence correlates well with the presumed borrowing of phonological features (cf. Jacobsen 1966:126-127) and of grammatical categories (cf. Jacobsen 1972 and 1967) from the neighboring families. (Recent description of switch-reference in Maidu and Yokuts, by Robert L. Oswalt and Geoffrey Gamble respectively, makes diffusion of this device to Washo seem more plausible than at the time of writing the latter article.) Regarding contact with Numic, it is striking to contrast with these structural influences and with the moderately large number of presumed loanwords reported below Aoki's (1975:195-196) findings regarding Numic influence on Nez Perce, where there are only two possible loanwords (from Numic 'coyote' and 'person, man') and no structural influences. This contrasts with a somewhat larger number of borrowings from nearby Salishan languages, and clearly points to much more recent and more hostile contacts with Numic than Washo has had.

[38] Sapir 1931:716.

[39] Fowler and Fowler, eds., 1971a:153; 'knee' on p. 152.

[40] Voegelin 1958:227.

[41] As attested in recordings such as watsí 'sagebrush bark' (Kelly 1932:109) and wat-sov, wat-sob, wat-so-vah, wadzo-ba, and also pah-wat-sov, pah-wah-zip 'sagebrush spp.' (Train, Henrichs, and Archer 1941:39-40).

[42] The symbol ' indicates that the prefix has the property of converting a following consonant to the corresponding member of the fortis series. Due to lack of information, this symbol is not always shown at the end of stems where it might be appropriate.

[43] On the second syllable of these forms, cf. Nichols 1974: 327, s.v. *ku-na; Miller 1967:18, no. 19. The Shoshoni word for 'shoe' is derived from that for 'foot'; their word for 'stocking', tapihya, contains the 'foot' prefix, apparently added to the stem for 'to itch'. As noted below, Washo has also borrowed a word for 'shoe' from a form similar to that of Northern Paiute.

[44] I am indebted to Michael Nichols for the former suggestion, and to Sven Liljeblad for the latter. Southern Paiute from Sapir 1931:715.

[45] Fowler and Fowler, eds., 1971b:141.

[46] Information from Sven Liljeblad and Catherine Fowler. Both members of the compound have cognates throughout Numic and in other Uto-Aztecan branches; cf., on 'white', Nichols 1974:339; Miller 1967:63, no. 458; on 'knife', Nichols 1974:342; probably Miller 1967:18, no. 14. A possible relationship to Washo ta·gil, archaic word for 'knife', now generally implying a 'stone knife', remains unclarified.

[47] Comments on the distribution of flora and fauna are based partly on Storer and Usinger 1963; on fleas see pp. 213-214, on the earthworm, p. 168. Both words are well established in Miwokan: Broadbent and Callaghan 1960:310, 316. Jacobsen 1966:132, fn. 21, pointed out the inappropriateness of a comparison of this word for 'flea' to words for 'louse' in other Hokan languages, but similar comparisons have again been made by Gursky (1974:196, s.v. LOUSE (2)).

[48] Information from Sven Liljeblad. The ants referred to by the Washo word have been identified conflictingly by different individuals as being red, or red with black rear ends, or small and black. The word occurs in all three branches of Numic and has cognates in the other Shoshonean branches of Uto-Aztecan (Fowler 1972b: 112, no. 19; 119, Set I; Nichols 1974:318, Miller 1967:17, no. 4); cf. fn. 11.

[49] These are described as very small black ants. The Miwokan word occurs in Central Sierra, Northern Sierra, and Plains Miwok, and seems to mean 'ant' in general (Broadbent and Callaghan 1960: 307).

[50] The Miwokan word seems to be attested only in Southern Sierra Miwok, glossed as 'edible cocoons' (Broadbent 1964:253) and 'caterpillar' (Broadbent and Pitkin 1964:37).

[51] Cf. Storer and Usinger 1963:239-240.

[52] The Miwokan, Maiduan, and Wintun words begin with ?-, as represented by Central Sierra Miwok ?awán·ata-. But in Pomo there is a velar or postvelar initial consonant, as in Kashaya

(Southwestern Pomo) q^{h}awina (form from Robert L., Oswalt); Barrett (1908:63, no. 177) records Pomo forms beginning with k-, except for Southeastern x-. Thus the Washo initial k- (g-) may represent another instance of an archaic aspect of form. Grunsky 1974:210 (second set) compares a similar Eastern Pomo (?) form xanariwa to Proto-Yuman *axnar 'tortoise' and Cocopa xan^{y}ár.

[53] Cf. Storer and Usinger 1963:244. Forms compared are Central Sierra Miwok šúm·aka-, Southern Sierra Miwok hum·u?li- / homo?le-, with presumed metathesis of the first two consonants.

[54] Gursky 1974:190, s.v. FROG (3), compares this Washo word to forms in Hokan Chimariko and Pomo, but notes also resemblances to Wappo kóto? and to Proto-Miwok *koto·la 'frog, tadpole'. But the forms cited in Broadbent and Callaghan 1960:310, s.v. FROG (2), point to Proto-Sierra Miwok *?ol·o?..., compared with Lake Miwok kolóˑlo. (Cf. the difference of initial consonant in 'turtle', fn. 52.) Another very widespread form for 'frog' (e.g. Gursky 1974:189, s.v. FROG (2); Broadbent and Callaghan 1960:310, s.v. FROG (1); Pitkin and Shipley 1958:181; Fowler 1972b:113, no. 51a; 119, Set I; Miller 1967:37, no. 192) can be compared to the Washo verb wá·gid 'to croak'.

[55] Both words seemingly show a narrowing of their original meaning. The former is compared to Northern Paiute ?a?wágu 'sucker' (Fowler and Leland 1967:385), ha?wágu 'sucker' (Kelly 1932:95), whereas the Northern Paiute word for the 'cui-ui sucker' is kuyúi (Fowler and Leland 1967:385). The latter is compared to Northern Paiute pak^{w}i (southern dialect pag^{w}·i) 'fish', Mono pahkwi 'fish (generic); trout', Shoshoni painkwi (objective form painkwa) 'fish' (cf. also Nichols 1974:332). Note that the Washo form may reflect the old *-n- now lost in Western Numic. Cf. Fowler 1972a: 261-262 on the ultimate relatedness of this to kuyúi and its cognates.

[56] Cf. Broadbent and Callaghan 1960:316; Jacobsen 1966:132, fn. 22; also Nisenan panaka 'woodpecker'.

[57] Cf. Central Sierra Miwok čí·šiwitna- 'buzzard'. I assume the -im ending is present under the influence of hú·šim 'buzzard'; otherwise it would point to a Maiduan source.

[58] Cf. Ultan 1964:369, no. 369.

[59] Cf. Maidu mákmàkki 'yellowhammer'.

[60] Cf. Jacobsen 1966:132-133, fn. 24; Jacobsen n.d.:231, sec. 7.2, fn. 84; Pitkin and Shipley 1958:179; Broadbent and Callaghan 1960:309. Gursky 1974:182 compares this Washo word to Yahi hustaya 'buzzard', but notes also the similarity to presumed Proto-Penutian *hus.

[61] The word occurs in all three branches of Numic and has cognates in Takic: Fowler 1972b:113, no. 57; 119, Set I.

[62] Most similar is Nisenan la·lak' 'gray goose' (especially in the transcription la·'?lak of Kroeber 1929:284). Similar forms also occur in the Southeast. Cf. Jacobsen n.d.:231, sec. 7.2, fn. 84; Haas 1969:82; Pitkin and Shipley 1958:181. Gursky 1974:191 compares similar forms in several Hokan languages.

[63] Cf. Broadbent and Callaghan 1960:313; Jacobsen n.d.:230, sec. 7.2. The mountain lion is primarily found on the west slope of the Sierras: Storer and Usinger 1963:355.

[64] Cf. Maidu mide 'bear, specifically the brown bear'. The Washo -?d- mimics the Maidu voiced implosive (d) (Jacobsen 1966: 128). The black bear is commoner on the west slope of the Sierras: Storer and Usinger 1963:348.

[65] Cf. Central Sierra Miwok tím·ili-, Southern Sierra Miwok tim·il- 'mole', assuming a metathesis of the last two consonants. There is a different Miwokan word for 'gopher': Broadbent and Callaghan 1960:311.

[66] This is a more dubious case of borrowing. Forms compared include Central Sierra Miwok ?épla·li- 'jackrabbit, hare', Southern Sierra Miwok ?epla·liH- 'jackrabbit', Nisenan pala·l 'cottontail'. Cf. Broadbent and Callaghan 1960:312; Jacobsen n.d.:231, sec. 7.2, fn. 84. Gursky 1974:202, s.v. RABBIT, compares this Washo word to Proto-Yuman *pxár 'cottontail rabbit'.

[67] Cf. Maidu tililili 'small gray pine squirrel with tufted ears, brown sides'.

[68] This animal was formerly not found west of the Sierras (Storer and Usinger 1963:345). The borrowing is specifically from Western Numic; cf. Northern Paiute pamúsi 'muskrat' (Fowler and Leland 1967:389).

[69] The Numic word compared occurs only in certain dialects of Northern Paiute; cf. fn. 9. More widespread in at least Western Numic, including some of the same dialects, is a form like *miha, for which an apparent Hopi cognate exists (Fowler 1972b:113, no. 64; 120, Set II; Miller 1967:51, no. 329). This suggests the possibility of a Numic borrowing from Washo, which however, seems unlikely on phonological grounds.

[70] There are some uncertainties and discrepancies among informants in identification, but it seems likely that this word referred to the red fox, as distinguished from mó·gop 'gray fox'. The latter is found principally on the western slope of the Sierras, whereas the red fox occurs in the higher mountains of the Great Basin (Storer and Usinger 1963:348). The form occurs in Western and Southern Numic, and may have cognates elsewhere in northern Uto-Aztecan (Fowler 1972b:113, no. 40; 120, Set II); cf. fn. 10.

[71] The word is attested throughout Numic, pointing to a proto-form *huna (Northern Paiute huná 'badger', Fowler and Leland 1967: 385, 389), and has apparent cognates in the other northern Uto-Aztecan branches (Fowler 1972b:112, no. 7; 119, Set I; Nichols 1974: 322; Miller 1967:18, no. 18). The Washo glottal stops constitute the main phonological difficulty in this comparison. The Washo word has seemingly been borrowed by Maidu (Jacobsen 1966:128 and 133, fn. 28).

[72] Cf. Nisenan sukku 'dog', Central Sierra Miwok čuku·- 'dog pet', Southern Sierra Miwok cukuH- 'dog, pet; guardian spirit of a shaman'. A comparison between Washo and Miwok forms was made already by Powers (Fowler and Fowler, eds., 1971b:119). For further comparisons and discussion, see Shipley 1957:270, sec. 1; Pitkin and Shipley 1958:180; Bright 1960:231, sec. 17; Gursky 1974:185, s.v. DOG (1). Borrowings from Spanish chucho 'dog' or from Russian suka 'bitch' have been thought of (the latter explicitly from the Washo form by Gursky).

[73] Fowler points out that the Numic forms occur only in Northern Paiute, Southern Paiute, and Shoshoni, i.e., in the language in each of the three branches that is farthest spread out away from the presumed homeland of the family, and they seemingly lack cognates elsewhere in Uto-Aztecan (1972b:115, note 11; 120, Set III).

[74] Cf. Central Sierra Miwok wil·iši- 'oak, Quercus lobata', Southern Sierra Miwok wil·ih- 'water oak; young sprouts of water oak, used for twined basketry'.

[75] Cf. Southern Sierra Miwok haha·-ha- 'golden-cup or Vibray's oak'.

[76] On the distribution of oaks, cf. Storer and Usinger 1963: 158-161; Fowler 1972b:109, Map 3.

[77] Cf. Central Sierra Miwok ʔey·e- 'manzanita (with small berries)', Southern Sierra Miwok ʔé·ye- 'manzanita', Lake Miwok ʔeyye 'pink manzanita berries', Patwin ʔe·ye 'manzanita berries' (Callaghan 1965:177; cf. Broadbent and Pitkin 1964:41). Green manzanita occurs mainly below 5000 feet on the western slopes of the Sierra (Storer and Usinger 1963:134).

[78] Cf. Central Sierra Miwok tú·ni- 'potatoes'; Southern Sierra Miwok tu·ŋi- 'a wild root like little potatoes'.

[79] Cf. Southern Sierra Miwok hel·i- 'fungus, edible, large, grows under pine needles on oak leaves'.

[80] Cf. Nisenan to·n 'pine nut', Maidu towan 'digger pine' (cf. Ultan 1964:367); also Southern Sierra Miwok ʔu·nu- 'buckeye', and similar forms occurring in other Miwokan languages (Broadbent and Callaghan 1960:308). The digger pine occurs along the western foothills of the Sierra at about 500-3000 ft. (Storer and Usinger 1963:149).

[81] This plant is found only on the eastern side of the Sierras (Storer and Usinger 1963:75-76). As the previous discussion of the form of this word suggests, cognates occur throughout Numic, and also in Tübatulabal (Fowler 1972b:114, no. 75; 118, Set I).

[82] The first part of this word was seen above to have been borrowed from a Northern Paiute form for 'sego lily' (cf. fn. 36).

[83] Cognates pointing to Proto-Numic *nabu are found in all three branches of Numic, and further cognates occur widely in other branches of Uto-Aztecan (Fowler 1972b:112, no. 20; 119, Set I; Miller 1967:23, no. 70).

[84] The Washo word has undergone a change and narrowing of meaning, as the Numic forms compared mean 'tule'. Cf. Northern Paiute sáibi 'tule' (Fowler and Leland 1967:384, 397), Shoshone saipih 'tule, bullrush (Scirpus lacustris)' (and saitoih 'cattail'). Cognates occur in all three branches of Numic pointing to Proto-Numic *sai-, and also in Tübatulabal and Takic (Fowler 1972b:113,

no. 35; 118, Set I). Nichols (1971:137-138) gives evidence for an early loss of medial *g from *sagi-, thereby connecting the stem to possible cognates meaning 'popcorn' in southerly branches of Uto-Aztecan (Miller 1967:51, no. 328).

[85] This is being compared to the stem for 'Indian rice grass', which is attested in all three Numic branches, pointing to a proto-form *wa?i, and with possible cognates in Takic and Hopi (Fowler 1972b:113, no. 61; 119, Set I). Some Numic forms are: Northern Paiute, Mono, Shoshoni wai, but Ute wa?aibɨ (from Fowler 1971a:192). It is thought the washo ending -mhu may reflect a former classificatory suffix *-mpɨ.

[86] Comparison is made to forms based on a Numic stem *sibu- 'rabbitbrush', such as Shoshoni sibapi. Northern Paiute has sigúpi 'rabbitbrush' (Fowler and Leland 1967:397). There are cognates in all three Numic branches and in Takic and Hopi (Fowler 1972b: 113, no. 24; 118, Set I; cf. Fowler 1971a:236-238).

[87] Cf. Shoshoni soni 'mattress', sonipɨh 'hay, grass; blanket'. The word is not well attested in Numic other than the Central branch, but has an apparent Tübatulabal cognate (Fowler 1972b:114, no. 81). Fowler (1971a:250-251, fn. 29) thinks of a relationship between these words and words for 'corn' in more southerly branches of Uto-Aztecan (Miller 1967:26, no. 102). For a parallel case of Washo ?'s not matched in Numic, cf. hó?la? 'badger' (fn. 71).

[88] Cf. Mono sahqwa?apɨ 'fir tree (of any species)'. This may be related to words for 'sage' and 'juniper' in other Numic languages and for 'leaf' in more southerly Uto-Aztecan branches (cf. Nichols 1974:336; Miller 1967:44, no. 255 'leaf').

[89] Cf. Northern Paiute tóoza?a 'Leptotaenia, one of the Umbelliferae' (Fowler and Leland 1967:388, 400). Cognates occur in all three branches of Numic, but are not known to exist in other branches of Uto-Aztecan (Fowler 1972b:120, Set III).

[90] Recordings by C. Hart Merriam and Grace M. Dnagberg attest to a Washo form similar to the Shoshoni form recorded as sag-ee-da 'prickly poppy' (Train, Henrichs, and Archer 1941:38).

[91] Cf. Central Sierra Miwok temá·l- 'to trade', Southern Sierra Miwok tema·l- 'to exchange'.

[92] Cf. Southern Sierra Miwok sa·wine- 'snowshoe'.

[93] Cf. Nisenan ṕili 'angle with hook and line, fish'.

[94] Cf. Nisenan molmol 'boil (tr. and intr.)'. Comparison is made to Maiduan forms with p instead of m in Ultan 1964:369.

[95] Cognates run throughout Numic, and also the Uto-Aztecan branches other than Tarahumara and Aztec, but the Washo ending -bi points specifically to Numic, and the -ŋ- to nearby dialects of Northern Paiute. Cf. Nichols 1971:140; 1974:128-129, 320; Miller 1967: 53, no. 359.

[96] Cf. Northern Paiute mokó 'shoe', earlier recording of Naches by Powell Mo-ko 'moccasins' (Fowler and Fowler, eds., 1971a:211), Mono mohqo 'shoe(s)', perhaps Tübatulabal woŋgo-l 'the shoe' (Voegelin 1958:228).

[97] Cf. Northern Paiute sana' 'pitch' (cf. Fowler and Fowler, eds., 1971b:124; sanáko?o 'gum', Fowler and Leland 1967:387). Cognates are found throughout the northern branches of Uto-Aztecan, and in some others also, pointing to Proto-Uto-Aztecan *sala (Miller 1967:50, no. 322). The Washo -l- seems more likely to be a substitute for Numic -n- than a testimonial to older Uto-Aztecan *-l-, which is regularly changed to -n- in the Shoshonean languages; perhaps more likely might be a reflection by Washo -? of an older form of the morphophoneme -'. I have previously compared the Washo word to Karok forms and to Yana ć́al?a 'pitch' (Jacobsen 1958:202), but now prefer the assumption of borrowing from Numic; similarly, Gursky (1974:201, s.v. PITCH (1)), compares to Achumawi isli, while yet noting the similarity to the Proto-Uto-Aztecan form.

[98] Cf. Northern Paiute wi̵dán·u 'fine-woven basketry tray; winnowing basket' (Sven Liljeblad).

[99] Cf. fn. 8.

[100] Cf. Northern Paiute co?ápi̵ 'ghosts' (Fowler and Leland 1967:402).

[101] Cf. Western Mono wee?muu?u 'a monster' (Sydney M. Lamb), and similar Northern Paiute forms in Lowie 1924:202 and Kelly 1938:366, 369.

[102] Cf. Maidu báno 'fish creel; a polite term for the male genitals, used by old women'.

[103] Cf. Maidu kómbo 'tribal name for the Yana Indians'. The Maidu b is voiced implosive, thus calling forth the Washo -ʔb- (cf. fn. 64).

[104] Cf. Northern Paiute táibo?o (Wheat 1967:17, 119), Shoshoni taibo / taaibo 'white man'.

[105] Cf. Northern Paiute, southern dialect pán·aki 'Bannock' (Sven Liljeblad).

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CHEMEHUEVI 'SAY' AND THE UTO-AZTECAN QUOTATIVE PATTERN[1]

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"Quotative" morphemes--used both to set off quoted speech and to mark statements for which a speaker wishes to disclaim responsibility--are found in many Uto-Aztecan languages. The Southern Numic branch of the Numic sub-family of Uto-Aztecan, however, seems not to use quotative markers as they are used in the rest of the family, but has developed some alternative constructions which merit investigation. In this paper I will examine 'say' and related words in the Southern Numic language Chemehuevi (particularly as compared with the closely related language or dialect Southern Paiute), and I will contrast the Southern Numic data with what appear to be more general trends in Uto-Aztecan as a whole.

1. Chemehuevi 'say'

The Chemehuevi and Southern Paiute verbs 'say', like a number of other important verbs in these languages, are closely connected with the demonstrative system.[2]

Southern Paiute has four demonstrative bases: i- 'this', ma- 'that', u- invisible, and a- indefinite. Chemehuevi lacks any productive use of the a- demonstrative, but otherwise has a similar system. Often a Chemehuevi demonstrative is prefixed by the syllable hu- (huma-, hu?u-, etc.). The use of the hu- prefix may have some emphatic value, since it seems to appear most commonly when the demonstrative is in a somewhat prominent position (e.g., as a demonstrative pronoun rather than a demonstrative adjective).[3]

These demonstrative bases are seldom used alone, but generally appear with various endings, as, for instance, third-person pronouns and postposition bases. They are also incorporated into several auxiliary verbs. With the suffix -ni, for instance, they mean 'do':

(1) DEM + ni = 'do' : ini-, mani-, uni-, ani-

Similarly, the suffix -ru?a may be added to a demonstrative base to form the verb 'be', and 'say' is also an extended demonstrative:

(2) DEM + ya = 'say' : maya- aya- (usually may-, ay-); in Chemehuevi also humaya- (humay-)

Note that *iy(a) and *uy(a) do not occur.[4] In both Southern Paiute and Chemehuevi ay- and may- can each be used for 'say', but Sapir's examples indicate that ay- may be more common in Southern Paiute, while may- is decidely more commonly used in Chemehuevi.

The bare demonstrative stem may be used in at least one instance

which I have discovered, after a phrase (particularly a name) quoted in isolation. In Southern Paiute it is the a- demonstrative which is used in this way:

(3) SP wɨgɨmp a: ni:a:-xai-va-ntɨ
vulva name-have-fut-partic '(It) will be called "vulva"'

In Chemehuevi, the correspondingly used demonstrative is ma-:

(4) CH na?ayncici-uŋ Amanda ma niya-maga-kay 'They
girl-she name-give-past named the
little girl Amanda'

Sapir reports that "extended forms" of the demonstratives a- and ma-, ay- and may- may also be used as the objects of berbs of saying (among others), as in

(5a) SP may-n nɨni nanka-k· ay-p·ɨ-nI
that-I me hear-past-partic-my 'That's what I heard'

b) SP may-a-n ay-kA
that-obj-I say-tns 'That I say'

I have found no examples of such "extended demonstratives" (i.e., ma- or a- plus y) in Chemehuevi. Either no demonstrative pronominal object at all appears in such constructions, as in

(6a) CH may-ka?a-n
say-tns-I 'That's what I said'

b) CH nɨ may-sumpaga
I say-want 'I want to say this'

or an ordinary inanimate pronoun serves as the object of 'say', as in

(7) CH hu?uru-k ɨtɨsamp may-ka-t 'That has been said
that(inan)-it always say-past-partic before'

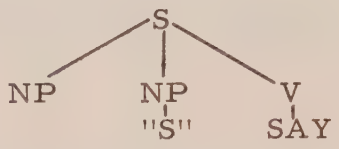
Sapir (pp. 206-207) regards (m)aya- as a "verbified form" of the "extended demonstrative" (m)ay- whose use was shown in (5). I think, however, that this word is a compound of demonstrative ma-/a- and ya, a word which may be reconstructed for Proto-Uto-Aztecan, or at least Proto-Northern-Uto-Aztecan, with the meaning 'say' (cf. Miller (1967) cognate set 363, with some additions noted in section 2 below). Therefore it seems that the whole word DEM + ya might have once meant literally 'say that'.

Here is one way that Chemehuevi/Southern Paiute 'say' might have developed. As shown in (3)-(4), demonstrative a and ma may be used to mark a cited word or phrase. Perhaps originally

(8a) NP says, "S"

where "S" represents the spoken sentence, was structurally something like

(8b)



or (8c) NP "S" ma/a ya
'say'

--assuming SOV order and the use of a demonstrative to set off the words spoken. From (8c), then, the final (m)aya sequence might be reanalyzed and eventually lexicalized as a simple verb 'say':

(8d) NP "S" maya/aya
'say'

Several years ago Margaret Press pointed out to me that the complements of Chemehuevi (and, as far as I can tell, Southern Paiute) 'say' are different from many other types of complement clauses in these languages.

In most embedded sentences in Chemehuevi and Southern Paiute, the subject appears in "object form". Compare, for example, (9a) and (9b):

(9a) CH Dan payɨkwa?i-y
leave-pres 'Dan's leaving'

b) CH Dani-a-n payɨkwa?i-ŋkw puni-ka
-obj-I leave-subord see-tns 'I saw Dan leave'

In (9b), the subject of the embedded sentence 'Dan leave' is followed by the normal Chemehuevi object marker -a. (English loans ending in a consonant commonly have an added vowel in their Chemehuevi underlying form; for names this vowel is always -i: Dan, then, is Dan(i) in Chemehuevi.)

However, complements of the verb 'say' have their subjects in normal nominative form:

(10a) CH ni timpiniw may-ka?a-n
I rich say-tns-I 'I say I'm rich'

b) CH imi-k pa?antim may-ka-?aŋ
you-cop tall say-tns-she 'She says you're tall'

c) CH Bridget kwipa-ka-t may-ka-?aŋ
fall-past-partic say-tns-he 'He said Bridget fell down'

Complements of the verb 'say', therefore, don't look embedded, in terms of the form of their subjects.

Also, the verbs of quoted sentences aren't marked with subordinators like the -ŋkw which occurs on the subordinate clause of (9b). The complements of 'say' in (10) could all serve as normal surface main clauses:

(11a) CH ni timpiniw 'I'm rich'

b) CH imi-k pa?antim 'You're tall'

c) CH Bridget kwipa-ka-t 'Bridget fell down'

The lack of object marking on the subjects of the complements of 'say' in (10), and the fact that these clauses don't really seem to be syntactically embedded, is explained by the pattern assumed in (8), in which the "complement" of 'say' need not necessarily be regarded as syntactically subordinate.

In many languages it is true that some complements of 'say' (normally referred to as "direct quotations") don't appear to be really embedded. The reason for this seems to be that a direct quotation is treated essentially like a meaningless string of sounds--or the name for such a sequence of sounds--rather than as a full-fledged complement clause.

In indirect quotations on the other hand various changes occur. In English, for instance, the subordinator that may optionally appear in indirect quotations:

(12) She said, "Bridget fell down." DIRECT
She said (that) Bridget fell down. INDIRECT

This is a language-specific phenomenon, of course. The characteristic and probably universal mark of indirect quotation is a change in referential pronouns:

(13) He says, "I'm rich." DIRECT
He says he's rich. INDIRECT

(14) He says, "you're tall" (to me). DIRECT
He says I'm tall. INDIRECT

(There may frequently be tense changes as well.)

In Chemehuevi the only syntactic difference between direct and indirect quotations which I have discovered so far is this pronoun change. Otherwise, the syntactic patterns of direct quotations (as in (15)) and indirect quotations (as in (16)) are the same.

(15) CH humay-ka-ʔuŋ papawa-ya-n puni-ka
say-tns-he bear-obj-I see-tns 'He says, "I see a bear"'

CH uruʔkwayiŋu-ʔ may-vi-ʔuŋ
go-you say-past-he 'He said, "You go"'

(16) CH papawa-ya-ŋ puni-ka may-ka-ʔuŋ
bear-obj-he see-tns say-tns-he 'He says he sees a bear'

CH piya-n-uŋ ni ka haʔičpunituʔa-waʔatim may-k
mother-my-she I neg pretty-neg say-tns
'My mother says I'm not pretty'

(Note that the verb 'say' may optionally be moved to the front of such sentences, as in the first example in (15); this does not change meaning.)

I assume that direct and indirect quotations are correspondingly similar in Southern Paiute, but Sapir gives no examples of indirect quotations that I have discovered so far.

The use of the same pattern for indirect as well as direct quotations may well represent an innovation, since (8) suggests that the pattern arose originally only for direct quotations. Such an extension does not seem unreasonable, however.

2. Uto-Aztecan quotatives

The expression of various types of quotation is more complicated in some other Uto-Aztecan languages than it is in Chemehuevi and Southern Paiute. In many languages,[5] a quotative morpheme is used to set off a quotation (direct in some cases, indirect in others) from the rest of the sentence. What is sometimes cited as a prototypical quotative pattern is observable in the Takic sub-family, for example in Luiseño:[6]

(17) LS wuna:l-up ʃuŋa:l yaqa: wuna:l-kun ŋe:-lot 'That woman
that-she woman says he-quot leave-gonna says that
he is going to leave'

or Serrano:[7]

(18) SR Juan kɨy kwɨn wö:ŋ
say quot rain 'Juan says that it's raining'

The same pattern may be observed in Shoshoni:

(19) SH Siten pa-niwai-na taina takuttiaih-kante mai utii niikwi-na.
he water-ask-asp man thirsty-be quot then say-asp

"water" mai yekwi-te mai. '"He asked for water, that man
quot say-prog quot is real thirsty," he told them.
'"Water' he was saying"'

((19) is a complicated pair of sentences, with several levels of quotation.) The pattern of (17)-(19) may be schematized as

(20) NP "S"-QUOT SAY
OR --> NP SAY "S"-QUOT 'NP says, "S"'

(Lindenfeld also reports this pattern for Yaqui, pp. 105-106.) As (17)-(19) indicate, in this and other quotative patterns the quotative morpheme may be enclitic in second position in the quoted sentence (as in (17)) or may follow the whole quoted sentence (as in (18)). Occasionally, quotatives may follow all or many of the words of the quoted sentence. The possibility of postposing the quotation (shown in (20)), which is almost a standard option, is another indication that the quotation does not have the status of an ordinary object complement.

Other quotative patterns are possible. For instance, in Luiseno the 'say' clause may be deleted if its subject and the subject of the quoted sentence are the same:

(21) LS wuna:l-kun moya-q...
she-quot tired-pres 'She says that she is tired'

This same-subject restriction does not seem to be general. In Tübatulabal, Yaqui, and Comanche a quotative morpheme may be used to set off any quotation, without an overt 'say':

(22) TB wɨkɨgimakil-iŋ-gɨt pic ma· a·li?id-iŋ-gɨt ih
come=get-you=obj-quot then where gun-your-quot here

cu:naba:n-gɨ-ki
inside-quot-I

"'I am coming to get you," he is saying; then, "Where (is) your gun?" he is saying. "Here inside," I am saying'

(23) YQ in kuna si yuk-ne-tia 'My husband says that
my husband much rain-fut-quot it is going to rain much'

(24) CM surɨkɨse? nɨmɨ-wɨ? yɨrɨhkih-tsi?, --haa, tɨa-tsa?
that people-scares-dim yes quot- ??

oha?ahnakatɨ na-ba?atu tusinU 'That little Scares-
coyote me-on spit People said, "Yes,
Coyote spit on me"'

(Note that in Tübatulabal a non-third-person subject of the deleted 'say' may be marked on the verb.)

(22) and (24) appear to be direct quotations. (25) shows that in Yaqui at least the pattern works for indirect as well as direct quotations:

(25) YQ in mala kaa ne tutu?uli-tia
my mother not I pretty-quot 'My mother says I'm not pretty'

(21)-(25) suggest that an additional quotative pattern is possible in addition to that of (20):

(26) NP "S"-QUOT 'NP says, "S"'

At first, a comparison of (20) and (26) suggests that the simpler (26) derived from (20) by deletion of the verb 'say'. Lindenfeld follows this line in positing a synchronic transformation to derive Yaqui sentences like (23) and (25) from underlying sentences in which a higher 'say' appears. Such an analysis might also be proposed for synchronic Luiseño, where the (20) pattern, as exemplified in (17), seems to be basic; sentences like (21) are less common.

However, a consideration of quotative morphemes throughout Uto-Aztecan reveals a significant fact about the origin of these morphemes. Although there are at least four possible shapes for Northern Uto-Aztecan quotative morphemes, each of the four seems to be relatable to a possible proto-root for 'say'"[8]

QUOTATIVE / 'SAY' COGNATE SETS

	quotatives	main verbs ('say', etc.)
(A) *kɨ	Serrano kwɨn(ɨ), Luiseño kun, Cupeño ku?ut/ku?ul, Tübatulabal gɨt/kič/giǰ	Serrano kɨy, Tübatulabal kɨ, Comanche me-kɨse?/surɨ-kɨse? (?)
(B) *ya	Southern Paiute y?a, Hopi ya:w, Cahuilla yal, Mono ya	Luiseño ya:/yax, Southern Paiute/Chemehuevi (m)a-ya, Cupeño yaxe-, possibly Serrano kɨy
(C) *tɨ	Comanche tɨa/rɨa, perhaps also Yaqui tia	Serrano tɨ:r 'tell', Southern Paiute/Chemehuevi tɨnia 'tell', Comanche surɨ-kɨse? (?), Mono tɨɨkkwii 'tell', Papago čɨ?i 'tell', Yaqui ?eteho 'talk', possibly also Hopi tiŋa 'tell', Aztec itoa (<*i-tɨ-wa --> itewa --> itoa ?)
(D) *mai	Shoshoni mai, Comanche meh <*ma-y(a) ?	Southern Paiute/Chemehuevi ma-ya, Comanche me-kɨse? (?), Kawaiisu mee

((D) seems to be of farily recent demonstrative origin within Numic only.)

The fact that the Northern Uto-Aztecan quotative morphemes turn out to be related to Proto-Uto-Aztecan words for 'say' suggests that the quotative morphemes may actually be reduced forms of main verbs 'say'. Thus the string

(27a) NP "S" SAY

might eventually become

(27b) NP "S"-QUOT

with the former main verb cliticized to the quotation, and reduced to the status of a quotative marker.

Postulation of a main-verb origin for quotatives explains some of their morphological peculiarities. Susan Steele (in an unpublished note written in 1971) and Roderick Jacobs (pp. 31-32) have suggested that the consonantal endings of the Takic quotatives (kun, kwɨn, yal, etc.) derive from syntactic suffixes, which would correlate with a main-verb

origin for these markers. Voegelin (p. 171) similarly believes that the -t of the Tübatulabal quotative gi̱t derives from a syntactic ending.

A string like (27b) might be hard for the listener to parse, since the initial NP bears no syntactic relationship to the rest of the sentence it introduces: as Lindenfeld notes (p. 105), 'my husband' is in no sense the subject of 'rain' in (23).

I suspect, then, that (20) above, or

(27c) NP "S"-QUOT SAY
NP SAY "S"-QUOT

represents a later development, in which a new replacement verb 'say' is introduced into the sentence merely for clarity. This new word might be phonologically similar to the older quotative (cf. Serrano ki̱y 'say' / kwi̱ni̱ quotative) or completely different from it (cf. Luiseño ya: 'say'/ kun quotative).

The assumption that the pattern (27b), with cliticized 'say', precedes the elaborated (27c) is supported by the Takic data: two quite divergent branches of Takic, Cupan (represented by Cupeño and Luiseño) and Serrano have the same quotative (< *ki̱ + n), but different main verbs 'say' (Luiseño and Cupeño 'say' < *ya; Serrano 'say' <*ki̱). We would normally expect that a pattern reconstructable for Takic generally, i.e., (27b), with quotative *ki̱+n , would be older than a pattern which cannot be reconstructed in this way (since although the syntactic pattern (27c) is general for Takic, no one verb 'say' is common to all the Takic languages). Thus, the development of (27b) from (27a) and the formation of the Proto-Takic quotative *ki̱n probably occurred at the level of Pre-Takic, while the development of (27c) from (27b) probably happened as the individual Takic languages were separating. Note that the Cahuilla quotative is yal, not the expected reflex of *ki̱n. I do not regard the Cahuilla form as evidence against the reconstruction of *ki̱n for Proto-Takic. I would assume that the Cahuilla quotative either represents a repetition of the (27a) --> (27b) --> (27c) sequence, with the development of a new quotative from general Cupan *ya 'say', or else that the yal quotative is a loan from Southern Numic or Hopi, which also have quotatives from *ya.

The proliferation of Uto-Aztecan words for 'say' and the cycle of SAY_1 --> $QUOTATIVE_1$, followed by the adoption of a new SAY_2, followed, apparently, by a further SAY_2 --> $QUOTATIVE_2$, is paralleled by developments concerning other Uto-Aztecan auxiliary verbs. Ronald Langacker (1974) has demonstrated how a given Uto-Aztecan language might have a number of different synchronic morphemes reflecting proto-words for 'be'--a passive marker, a tense marker, and a synchronic

'be', perhaps. (For example, Southern Paiute has the passive suffix -t̲ɨ:-, the present tense suffix -y̲ɨ-, and a suffixed 'be' -ka(i)-, among others, each of which can be identified with a different proto-root for 'be' isolated by Langacker.) It seems likely that similar proliferation of words for 'do' will also be demonstrated for Uto-Aztecan. It appears that the family has a number of different ways to say 'be', 'do', and 'say', with the different languages adopting different uses for each element in their synchronic grammars.[9]

Perhaps the commonest use of quotatives in Uto-Aztecan main clauses, however, may not be with either direct or indirect quotations from a specified speaker, but is rather in sentences where the subject of the deleted higher 'say' is unspecified or impersonal. Thus, an underlying structure like

(28a) NP "S" SAY

would surface as simply

(28b) "S"-QUOT

being translated with an added phrase like 'it is said', 'they say', 'people say', etc., or perhaps with the quotative left untranslated. Note that an important difference between the structures (27) and (28) is that while (27) refers to an action--describing the occasion of someone's making a quoted remark--(28), on the other hand, contains an essentially stative use of 'say', in reference to a general/habitual/nonactive sort of saying. Consequently this use of the quotative is usually seen on sentences referring to states, though exceptions can be found:

(29) LS ca:m-kunu-s ʔa:cicum
we-quot-we crazy 'They say we are crazy'

SR ɨmiʔ kʷɨnɨ-m amay ɨnan
you quot-you him know 'You are said to know him'

TB mo·momo·ht-k·itc· o·bowɨ-kaŋ o·yan·ac a·dzowa·l-a
jimsonweed-quot power-has surpassing shaman-obj
'Jimsonweed, it is said, has more power than the doctors'

HP hak ya:w nɨyiwteʔ momospala-t qa tɨ:moytaniʔ
some quot pregnant honey-obj neg eat
one
'They say that someone who is pregnant shouldn't eat honey'

SH Isen tavai newi waseppeh, mai, apaise. 'That Sun used to
that sun people kill quot long kill people, it is
(obj) ago said, long ago'

Because of the association of this use of the quotative with the idea of impersonality, quotatives may therefore in some languages be used to mark many sentences for which the speaker does not claim direct responsibility. This device is especially common at the beginnings of texts, particularly myths or stories of events in which the speaker did not participate. Some examples:

(30) LS ʔaw-quʂ-kuna yaʔas po-tuŋ Juan
be-past-quot man his-name 'Once there was a
man named Juan...'

CP kəlawət kuʔut wih wacpəyəxwən 'There were two sticks
stick quot two were-stuck-in stuck in the ground, it
is said'

TB pic-kic... 'Then, it is said,...' (every sentence of some texts
then-quot begins this way--cf. Voegelin p. 194, text 2)

CM soobeʔ sikitsaʔ ria kuyunii?nii bisikwanuuʔIbinI 'Long ago,
long ago quot turkeys slide much it is said, turkeys
were sliding much'

The "distancing" function of the quotative is also suggested by the Hopi data in [10]

(31a) HP noq ʔim ʔas hi:ta hincak-ni 'And what were you
and you mod what uncertain-will contemplating doing?'
do

versus

(31b) HP noq ʔim yaw ʔas hi:ta hincak-ni 'And what were you
quot supposed to do?'

3. Quotatives in Southern Numic

In Southern Paiute and Chemehuevi/Southern Paiute (m)aya 'say' (and also, probably, Kawaiisu mee) in (8) above suggests that Pre-Southern Numic may have had a functional quotative marker of demonstrative origin. However, as (10), (15), and (16) show, there is no special quotative marker separate from the verb 'say' on quotations in Chemehuevi. The situation seems to be similar in Southern Paiute--

(32) SP axan·i-va·ŋa-n uvai ai-p·ɨga šinaŋwaɁI 'What, then, shall
how=do-fut-her-I then say-past coyote I do to her?" said
Coyote'

--and also in Kawaiisu--

(33) KA ʔusu paka-ɨɨ-mi nɨʔɨ mee-neena niwɨzirɨkiži '"I already
al= kill-tns-you I say-tns= canary killed you,"
ready obj 3=anim said Canary'

Sapir's grammar lists a quotative enclitic for Southern Paiute--the -y?a- which appears under (b) in the list of cognate sets above. None of Sapir's typically voluminous discussion accompanies the description of this morpheme, however, and the four cited examples of its use do not clarify why -y?a- rather than -ya?- was posited as its underlying shape.[11] The only use I have discovered for the Southern Paiute quotative is as a text introducer, as in

(34) SP sinaŋwavi-y?a-gw aŋA m·ava kaniga 'Coyote, it is said,
coyote-quot-pret he there live was living there'

However, the quotative is used in this way in only three out of Sapir's 18 Paiute texts--the usage seems to be somewhat moribund in Southern Paiute.

The text quotative -y?a- (assuming it reflects a Proto-Southern Numic form) has been entirely lost in Chemehuevi and Kawaiisu, so far as I can determine. (35), for instance, is the first sentence of a traditional Chemehuevi myth collected for J. P. Harrington about 50 years ago.[12]

(35) CH sinawav kanigai-mi ʔata?ayva-ya-aŋ maŋa-v
coyote live-usit crow=nephew-obj-he him-at

nagamihavi-yɨ
sick-subord

'Coyote was there, and his crow nephew was lying sick'

In the Kawaiisu texts I have seen, similarly, no introductory quotative appears.

Apparently, though, alternative devices are being developed, in modern Chemehuevi at least, to show that a statement represents something that has been said by someone. In the remainder of this paper I will present some more Chemehuevi data which seem to bear

on the question of how quotatives develop, in line with my speculations in section 2 above.

I have recorded a number of personal reminiscences from my Chemehuevi teacher Pearl Eddy. (36) presents three sentences taken from one of these texts:

(36) CH pipiso?ɔci-w uni-ka-mi-mpɨg ay-ka-ni
children-pl do-pl-usit-past
'The children had a habit of doing this (for them)'

CH nɨmias tɨnawɨru-kay uni-ka-mi-mpɨg ay-ka-ni
us follow-past do-pl-usit-past
'(They) followed us'

CH hayta-?ɨm humay-vɨg may-ka-ni...
then-they say-past
'And then they said...'

The word aykani or maykani which appears at the ends of these sentences occurs very frequently in Mrs. Eddy's texts--she says that it identifies the sentence as part of a narrative. The same word showed up when I asked how one would say 'they did it' as part of some longer story:

(37) CH ini-ka-nɨ-mpɨg may-ka-ni 'Then they did this...'
do-pl-usit-past ay-ka-ni (simulated narrative)

The form aykani seems to be commoner in fast speech, where it generally is incorporated phonologically, almost like a long clitic, onto the end of the preceding word (just as, perhaps, the words for 'say' were cliticized as they developed into quotatives in historical Uto-Aztecan; cf. (27)). When a sentence like the ones in (36)-(37) is repeated slowly, the cliticized aykani is often deleted, or is replaced by maykani, which is heard more as a separate word.

The word (m)aykani seems to be composed of ay/may 'say' plus the tense marker -ka- and a following enclitic -nia-, which Sapir glosses as 'like'. Sapir claims that the combination of ay/may plus nia means 'think'. But the examples of the use of maykani in non-text sentences in (38) show that in Chemehuevi at least the meaning of (m)ay...nia- is not just 'think':

(38) CH Bridget anɨmpɨciwɨni may-ka-nia-n 'I see that Bridget
pretty I is pretty'

CH ?ɨmi-k pa?antɨm humay-ka-nia-n 'I wonder if you're
you-cop tall I tall'

CH Dan ?uŋ payɨkwa?i-ŋwɨncik may-ka-nia-n 'I think Dan's
he leave-gonna I going'

CH ?ɨmi-k humay-vɨ may-ka-ni 'I heard you say it'
you-it say-past

(Note that it is possible for the subject of maykania- to be marked with a final clitic, as in the first three sentences; also, humaykania- is a possible variant of maykania- (with the demonstrative augment hu- described in section 1).)

I am sure that the glosses given for the sentences in (38) are not the only ones possible. Note that the word aykani/maykani/humaykani is almost never translated as 'think'; its purpose seems to be to add the same kind of distance to a main clause that is added by quotatives in examples like those in (29). This Chemehuevi expression seems to be a quotative or evidential of sorts in the making. It is speaker-related, though, as the glosses for the examples in (37) indicate (I have no examples of the use of this word with any other subject but 'I') and as shown by the fact that it also appears in personal narrative, as in (36) (where it is certainly most unlikely to mean 'think').

The meaning for (m)aykani which best relates the uses of this word in (36)-(38) is, I think, something like 'I say it like this'. In (36) it's 'I say it like this, because it's my story'. In (38) it's more 'I say it like this' (somewhat hesitantly) 'but I realize that's just my personal opinion'. Morphologically, the word's structure confirms this analysis. ay and may, as shown in section 1, consist of 'say' plus a demonstrative, and the ni(a) enclitic which is included in the word means most literally 'like'.[13]

4. Another quotative-like element in Chemehuevi

I have discovered an instance of what may be another quotative derived from 'say' in the Harrington Chemehuevi text referred to earlier. Every word spoken by Coyote in this text is marked in a special way, with the suffix -ayk^{y}(A), as in

(39) CH puhwavaka-tɨ· -kay-na-aŋ-ayk^{y} maru?a-va-ayk^{y}A
bewitch-pass-perf-nom-he- be-fut-

may-k sɨnawavI
say-tns coyote

'"It might be that he has been bewitched," said Coyote'

Now, since this device is used only for Coyote's speech, it cannot be regarded as an ordinary quotative. (Although Carobeth Laird reports that this use of -ayk^{y}A was usual in Chemehuevi Coyote tales, I have found no trace of such a word in the Southern Paiute or Kawaiisu reports of Coyote's speech that I have seen.) Apparently, though, having special ways to set apart Coyote's speech was a typical feature of Numic narrative--in Shoshoni, for instance, the suffix -pai is so used. While Cottontail says yaha 'Woodchuck' in a Shoshoni story, Coyote repeats after him yahampai (Miller 1972, p. 54). However, there are several important differences between the Chemehuevi Coyote suffix -ayk^{y}A and the Shoshoni -pai. First, while Shoshoni -pai is treated simply like an extra syllable in the structure of the word it follows (note that it becomes -mpai after the nasalizing stem yaha-), Chemehuevi -ayk^{y}A is not just an ordinary suffix. In the first word of (39) it follows the syntactic enclitic -aŋ, although pronominal enclitics are typically the very last elements in a Chemehuevi word. Moreover, in this word and many other words spoken by Coyote in the cited text the final enclitic -aŋ (underlying -aŋa-) is in its ordinary surface form, with the final underlying vowel elided. (If another true enclitic, rather than non-clitic -ayk^{y}, followed -aŋa- 'he', the final a would be preserved: cf. -ana-n# (⩽ana-ni-) 'he...I'.) -ayk^{y}(A) may be in the process of being cliticized, but it is not yet a real suffix or enclitic.

Second, the Shoshoni suffix -pai is not, apparently, analyzable (or at least Miller notes no etymology for it (p. 26)), but the Chemehuevi suffix could be analyzed into ay 'say' plus a tense suffix -ka. In fact, Coyote's -ayk^{y}A looks quite similar to the word aykani described in section 3. They are similarly in the process of becoming cliticized, in fact ayk^{y}A is precisely the way Sapir transcribes 'say' plus tense -ka- in Southern Paiute.

It is possible, then, that the Coyote "auotative" ayk^{y}A is actually a development parallel to the development of quotatives sketched in (27) above but restricted, for some reason, to Coyote only. Another possibility is that -ayk^{y}(A), and the Chemehuevi Coyote's frequent exclamation hayk^{y}, are identifiable with a Southern Paiute exclamation aayk·^{x} or aayka-, glossed as 'oh!' by Sapir (pp. 272, 545). The long initial vowel in the Southern Paiute word is puzzling, but I see no reason in principle why this 'oh!' might not also be derived from 'say'. Consider the exclamatory use of English say! or I say!. English o(h) may also have a punctuational or almost "quotative" use, as in songs: I'll sing you 'one', o! (namely...). Deborah James (1972, p. 162) has pointed out that one sentence-internal use

of English oh "seems to always indicate that the speaker is making a deliberate decision or choice as to what to say next"--a choice that he might announce explicitly with words like I'll say or perhaps I'd say. Such a choice is always inherent in a speaker's decision of exactly how to tell a story, even one which has been told many times before, and may suggest another reason why quotatives derived from 'say' show up with great frequency in narratives. Indeed, the Uto-Aztecan quotatives certainly seem to be interjections of a rather restricted sort. I have only scratched the surface here in pointing out some of the ways that the rather dull-looking quotative may be of interest.

ABBREVIATIONS

Language Names

CH	Chemehuevi	KA	Kawaiisu	SR	Serrano
CM	Comanche	LS	Luiseño	TB	Tübatulabal
CP	Cupeño	SH	Shoshoni	YQ	Yaqui
HP	Hopi	SP	Southern Paiute		

Grammatical Terms

3	third person	neg	negative	pres	present
anim	animate	nom	nominative	pret	preterite
asp	aspect	obj	object	prog	progressive
cop	copula	partic	participle	quot	quotative
fut	future	pass	passive	subord	subordinator
inan	inanimate	perf	perfective	tns	tense
mod	modal	pl	plural	usit	usitative

FOOTNOTES

1. A shorter version of this paper was presented at the Great Basin Anthropological Conference, Carson City, Nevada, September, 1974.

I am grateful to Allen Munro for his helpful comments on this paper. I have also been helped by discussions with Curtis Booth, Donald Crook, Carobeth Laird, Ronald Langacker, and Margaret Press.

2. Chemehuevi data (except as noted) is from my field notes from work with Pearl Eddy of Parker, Arizona, to whom I am most grateful. All Southern Paiute data is from Sapir 1930-31. Other sources are acknowledged below.

Chemehuevi forms are written roughly as recorded. The stop series shows a three-way intervocalic contrast between spirantized, nasalized, and plain (I do not hear geminates) stops. Final vowels are shortened if long underlyingly and deleted if short; the glide of a final diphthong is likewise deleted.

3. The identity of Chemehuevi hu-, which may be related to several su- or sV- prefixes associated with demonstratives in other Numic languages, is rather obscure. At first glance there appears to be no trace of the formative in Southern Paiute, but Sapir does note (p. 178) that the ma-, i-, and u- demonstratives have "two-moraed doublets" $m^{w}a$-, $i^{?}i$-, and $u^{?}u$-. These longer demonstratives may correspond to the Chemehuevi hu- forms, since Chemehuevi initial h- is lost in Southern Paiute.

According to Maurice Zigmond, the presence of an sV- augment on Kawaiisu demonstratives consistently distinguishes pronouns from demonstrative adjectives.

4. An interesting topic for further investigation is the question of why only certain demonstratives are incorporated into given verbs. As (1) shows, 'do' has been recorded with all the demonstrative bases. As far as I know, only u-, a-, and ma- occur with -ru?a 'be', and only a- and ma- with -y(a) 'say'. Why?

5. My survey concentrates on Northern Uto-Aztecan, but I do assume some greater generality for my conclusions--the Yaqui data is included to show that my statements do not hold solely for Northern Uto-Aztecan.

6. I have adapted my examples from a variety of sources, for all of which I am very grateful. These are Davis 1973, for Luiseño

(except for 30 which is from my own notes); C.F. Voegelin 1935, for Tübatulabal; Donald Crook, for Serrano; Lindenfeld 1973, for Yaqui; Canonge 1958, for Comanche; Miller 1972, for Shoshoni, and (personal communication) also for Kawaiisu; C.F. and F.M. Voegelin 1968, for Hopi (except for 29, from my notes); J.H. Hill 1966, for Cupeno. My Luiseno and Hopi informants were Villiana Hyde and Dorcie Ahownewa.

7. Donald Crook informs me that this paiiern is not possible in Serrano if the higher subject is 'I'.

8. Ronald Langacker provided some of the cognates in the following lists.

A derivation similar to that suggested below for Aztec itoa was proposed by Susan Steele in 1971. There are a number of cornates for a *wa morpheme having to do with saying: Papago ahg/a?aga 'say', Cupeno yewaywe (eventually *ya-wa ?) 'speak', Hopi ?a:w 'tell' and quotative ya:w, etc.

9. This multiplicity of uses for given reconstructable elements in Uto-Aztecan is of course paralleled by Susan Steele's (1973) demonstration of the different uses of several Proto-Uto-Aztecan morphemes as markers of tense, aspect, and modality, depending upon their position in surface sentence structure.

10. Donald Crook reports that in Serrano, however, the quotative may not cooccur with a modal enclitic (i.e., with any word that would correspond with ?as in the Hopi example). The interaction of quotatives and modal elements should be investigated further.

11. In that case, the ? might be more clearly identifiable with a 'dubitative' Southern Paiute enclitic of that shape.

12. I am grateful to Roderick Jacobs for obtaining a copy of the text for me.

13. Another interesting use of -nia- is in sentences like

(i) CH Bridget kwipa-vɨ
fall-past 'Bridget fell down'

(ii) CH Bridget kwipa-ti-to?a-ni 'I think Bridget fell down'

and

(iii) CH Abby turti?a-y
make=tortillas-pres 'Abby's making tortillas'

(iv) CH Abby turtia?a-ti-to?a-ni 'Abby must be making tortillas'

I think that the -to?a- before the final -ni (enclitic -nia- 'like') in (ii) and (iv) may possibly be identified with Sapir's enclitics -ru?a- interrogative or -rua- 'like' (pp. 92-94), but the sequence -ti-to?a-ni seems to have no parallel in Sapir's grammar. I have no idea what the element -ti- could be.

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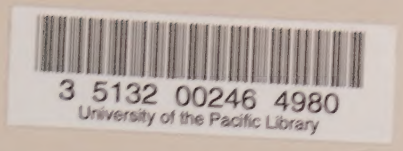
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